The Automobile

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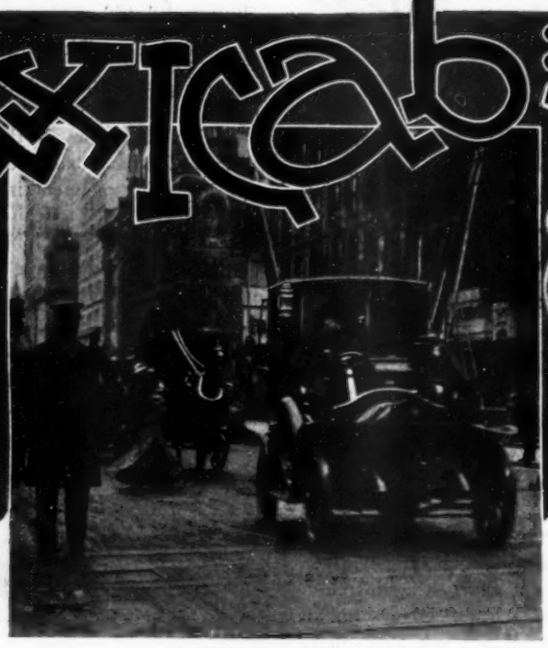
The Taxicab: Forerunner of the Commercial Era

By W. F. Badley



IN the transition from the pleasure to the commercial phase of automobiling, naturally slow at first, but destined to develop with increasing rapidity, the taximeter cab comes as the natural forerunner. Despite numerous points of similarity between the touring pleasure car and the public service vehicle, there are still numerous lessons to be learned by constructors and operators in this line of commercialism. Europe plunged in nearly three years ago with gasoline taximeter cab services which, if not always the most profitable of ventures, have certainly given their promoters valuable experience and useful data for future developments. New York really only became interested in the taxicab movement this year, for though an electric cab service has been in operation for a long time it was not until 1907 that an electric company adopted gasoline and the first company was formed to operate gasoline cabs exclusively.

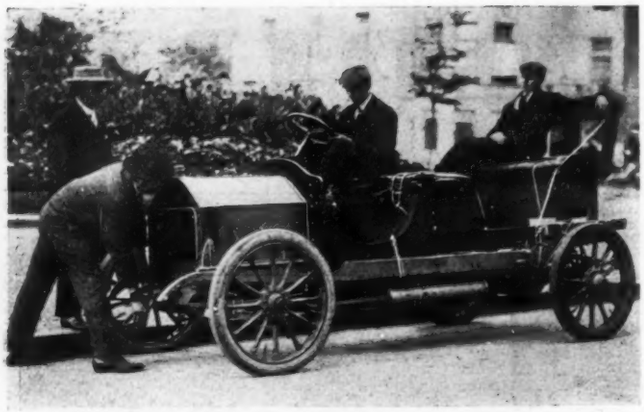
In the operations of the New York Taxicab Company, which, being the only one in the United States to operate gasoline cabs exclusively, and having 150 in use already and 150 more promised for May 1, may claim to be the most important, there are plenty of interesting features for the ordinary automobilist. The gray uniformed drivers who sit behind the steering wheel of the handy little Darracq cabs now so familiar on the streets of the city have been admitted into a sort of partnership with the directors of the company. The driver receives no wages, his remuneration being 20 per cent. of the net earnings of his cab, the amount being paid to him at the end of each day. In Europe taxicab drivers are generally paid a small wage, then given a percentage on a sliding scale basis, the percentage increasing with the amount of the earnings. The American plan is simpler, and is believed to work better than the foreign one by more completely uniting the interests of driver and controlling company. The method of control by means of the taximeter is too well known to need much explanation. Passengers are called upon to pay the amount registered on the dial of the instrument, the rate of fare being 30 cents for the first half mile, 10 cents every additional quarter mile, and 10 cents for every six minutes' waiting. The only extras are return fare when the cab is taken above One Hundred and Twenty-fifth street and left, or when the Hudson or East rivers are crossed. These extras have to be rung up on the dial before being collected, so that overcharging of the public is practically an impossibility, and disputes are unknown.

Naturally, there have been attempts in New York, just as in European cities, to cheat either the passenger or the company, or both; but he is a clever man who can dodge the taximeter. All that the passenger is called upon to pay is the fare indicated on the dial, and as every cent charged thereon is permanently recorded by the instrument and must be accounted for to the company, nothing is to be gained by overcharging, even if that were possible. The only way in which it would be possible to cheat the company would be for the driver and passenger to be in collusion, and for the former to accept an agreed sum without putting his recording instrument into operation. It is a dangerous proceeding, however, for the passenger might be an inspector of the company; further, too great a discrepancy between the total distance covered and the fares received would reveal itself automatically on the tell-tale indicator.

Work and Pay of the Taxicab Driver.

At the Taxicab Company's temporary station on Sixty-second street, Manager Alfred F. Camacho and his assistants have a busy time from 6 to 11 A.M. The first batch of cabs is sent out at 7 o'clock, each driver being given a measured quantity of gasoline, supplied with a daily report sheet, and allotted to a station at some hotel or railroad depot, to which he must report at the end of each journey. At intervals up to 11 o'clock other groups are sent out with a spick and span vehicle, a clean sheet, and a truth-telling recording instrument.

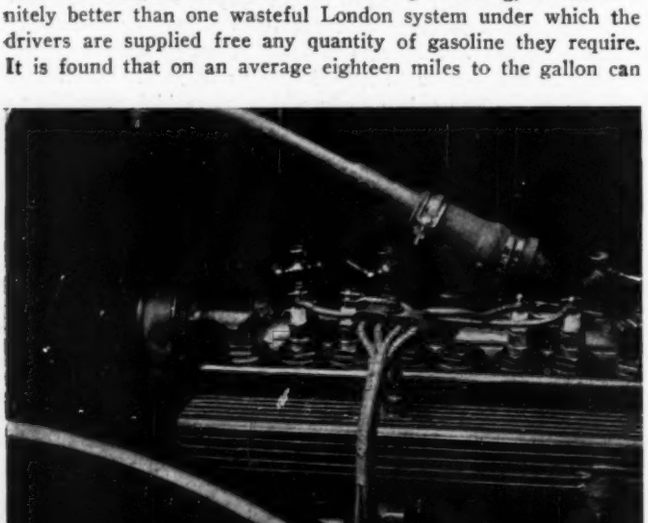
There is a freedom about the life of a taxicab driver which, together with the fairly liberal earnings, makes the profession a popular one, as is evidenced by the long waiting list. Each



"PROFESSOR" CAMACHO DRILLING WOULD-BE DRIVERS.

driver must be on hand to take charge of his cab on the appointed starting hour, must always report to the inspector at the hotel station he is attached to, but is not otherwise bothered with restrictions and regulations. As a newcomer, he is given one of the poorer stations, and gradually advanced to the better ones as he proves his ability. Some system of rotation is observed, so that the same men shall not always monopolize the stations where business is usually brisk. There are no regulations fixing the number of hours a man shall work, though naturally the company would find little need for the services of a man who habitually returned to the central station after three or four hours on the streets. Should he select, however, to go out early in the morning and not return until midnight, no objection would be made, providing he was on hand for the next day's run at his appointed hour.

Immediately on returning to the central station the driver turns in his daily report sheet, showing total takings, and is given 20 per cent. of that sum, minus the amount charged against him for gasoline supplied at cost price. As each cab covers on an average eighty miles a day, though as shown by the records there are some which attain as high as 150 miles in one day, 20 per cent. must give a very satisfactory day's wage, even when allowance is made for returning empty to the hotel station. By only being called upon to pay for the amount of gasoline consumed, economical driving is more directly encouraged than by the European system, under which an allowance of fuel is made on what the company considers to be average running, and is infinitely better than one wasteful London system under which the drivers are supplied free any quantity of gasoline they require. It is found that on an average eighteen miles to the gallon can be obtained from the four-cylinder engines, each vehicle consuming between four and five gallons per day. Considering the frequent stops and restarts occasioned by city traffic, this is a very satisfactory performance.

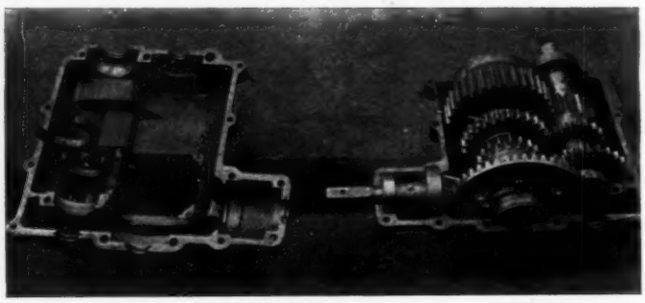


EIGHTEEN HORSEPOWER FROM THIS COMPACT POWER PLANT

Adding tips to the percentages earned, there is probably a good deal of truth in the assertion of some drivers that they have netted $50 in one week. Even $5 a day, which is probably not much above the average, is sufficiently good earning for a driver of whom no mechanical experience is required to attract a reliable class of men. Should any defects have been noted during the day's running, they are reported on entering the station and attended to by the repair department; otherwise the cabs receive their ordinary toilette and have oil and gasoline tanks filled in readiness for the next day's business.

How One Tire Maker Vouches for His Product.

There is a valuable lesson which will not be lost upon the private automobilist in the system of payment for tires. Instead of buying tires for all their cars and maintaining stocks, the Taxicab Company has a contract with the Goodrich Tire Company by which payment is made for tires according to mileage. This relieves the Taxicab Company of much responsibility, for whether the tires give long service or break down after a short life, payment is only made on the mileage they furnish. It proves too that tires, erroneously supposed to be the most unreliable part of the automobile, can be guaranteed on a perfect commercial basis. What might at first sight appear a complicated system is in reality exceedingly simple. An employee of the Goodrich Company is maintained at the Taxicab depot, every tire is numbered, and a complete record kept of its mileage performance. Naturally this would not be possible without the use of the taximeter. As all the cars have been put into circulation since the spring, it is too early yet to obtain figures regarding their tire mileage, no shoes having yet retired from active service, despite the rough usage the rear ones necessarily have to support through poor driving.



DIFFERENTIAL AND TRANSMISSION IN ONE CASING ON FIXED AXLE.

Punctures have no terrors for the taxicab man. If a tire fizzles out, he takes down the Stepney from its brackets on his right hand side, attaches it to the spokes of the wheel by clamps provided for that purpose, leaves the deflated tire in position, and in two minutes is off again. The Stepney, a British contrivance over which Manager Camacho is enthusiastic, consists of a tire mounted on a special rim with lugs for attaching it to the spokes of the road wheel. If a puncture or blow-out occurs when a passenger is in the car, the driver takes him to his destination on the Stepney, then, acting on instructions from the management, hurries to the Sixty-second street station, where the Goodrich man is in attendance. There is nothing, however, in the wheel to prevent it being run with perfect safety for any distance on either front or rear wheels.

The recording instruments are handled in a similar manner, each of the little clockwork boxes being hired from the Popp Company of Paris and maintained by a French expert always in attendance at the central station. In this branch of the taxicab business, also, foreigners have at present a monopoly, all the in-

struments used in this country being either of French or German origin, the former largely predominating.

"Green" Drivers Are the Curse of Taxicab Companies.

In any automobile cab undertaking the operating company is largely dependent on the skill or otherwise of its drivers, particularly during the first few months of operation. Even in France, where every driver of an automobile must hold a government certificate, the shareholders have had to bear the loss of scores of ruined gears and damaged cars due to reckless driving. Manager Camacho can tell stories which would be laughable, if they were not so costly, of young men provided with a badge from Albany and a hackman's license, who could be fooled with advice on crankshaft valve lubrication, and had the ability to put sets of gears out of business in much less time than any machine shop could produce them.

When the model station has been completed at Fifty-seventh street, between Eleventh and Twelfth avenues, a more complete system of breaking in green hands will be adopted than is possible now. Meanwhile, elimination is being carried on, those drivers who run out of the garage with a grinding clash of gears, or who fail to keep out of accidents, being asked to tender their resignation. Lubrication, simple as it is on the Darracq taxicab, appears to be beyond the comprehension of a few of the novices who are elevated to the seat behind a steering wheel, with the result that the engine suffers. One of the driving rules declares that the men must keep their engines smoking, and as there is, fortunately for the company, no law in New York against smoky exhausts, the majority of the drivers are generous in the use of lubricating oil.

Though a taxicab might do good service as a touring machine, the latter is not the best type for economical exploitation in city work. Either because they failed to realize the limitations of the average touring car for this special work, or because they were too busy to pay attention to the development of a new type, American firms have allowed the foreigners to obtain a considerable lead in the matter of taximeter cabs, with the result that both the New York Taxicab Company and the New York Transportation Company have gone abroad for their vehicles. The former company employs the special Darracq cab exclusively, importing them complete with body and recording instrument.

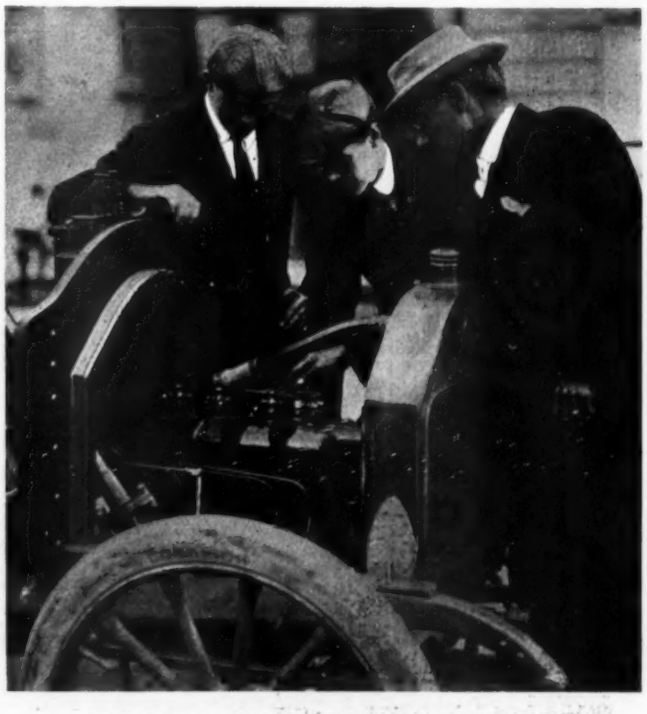
Compactness, ease of handling, and interchangeability have been sought in the new design. By producing the four cylinders, of 3.3 by 3.9 bore and stroke, in one casting it has been possible to obtain one of the most compact power plants on the market; the arrangement, too, allows of considerable simplification of the inlet, exhaust, and water piping, the exhaust manifold being cast integral with the cylinder block and equipped with radiating flanges. Water connection merely calls for two pipes, one connecting to the head and the other to the base of the cylinders. Ignition is by high tension Bosch magneto carried in an accessible but out-of-the-way position on the crankcase under the exhaust manifold. Sparking point is fixed, but may be retarded for starting by means of a trigger near the cranking handle.

Driving thus reduces itself to the action of steering, operating a clutch, brake and accelerator pedal and a throttle on the steering wheel. Gear changing is by means of a side lever operating in a gate sector. In addition to the switch and the pressure feed lubricator on the dashboard, there is a small lever by means of which the exhaust gases can be made to pass through a foot-warmer in the floor of the cab before reaching the open air. By reason of the short wheelbase and the narrowing of the chassis in front, the cabs are exceptionally easy to handle in traffic, and can turn around in an ordinary crosstown street of New York City without use of the reverse. When this series was designed, turning had to be given particular attention on account of the rigorous regulations of the London police on this matter.

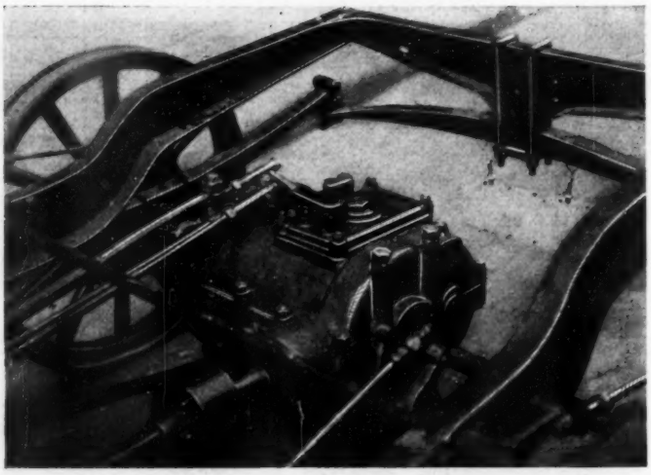
Simplicity and interchangeability are believed to have been attained by uniting the differential and gearset in one housing carried on a solid fixed axle. The live axles, from each end of the gearcase, pass through the bored ends of the fixed axle to the road wheels. Dismounting the live axles is quickly accomplished by taking off six nuts on the hub of the road wheel and drawing the shafts out; to dismount the casing it is disconnected from the driving shaft, the three changespeed and one brake connecting rods are disconnected and the four retaining bolts by which it is secured to the fixed axle are withdrawn. When it is necessary to make repairs on the transmission the case can be taken down and another one put in its place with a loss of probably less than an hour. Three speeds forward and one reverse are provided, with direct drive on the high. The internal expanding foot brake is carried on an extension of the lay shaft outside the casing. The emergency brakes, operated by a side lever, are also of the internal expanding type on the road wheels.

A PUNCTURE, TWO MINUTES' DELAY, AND OFF AGAIN.

Immunity from repairs, or at any rate a reasonable freedom



EXPLAINING SOME OF THE ELEMENTS OF IGNITION.

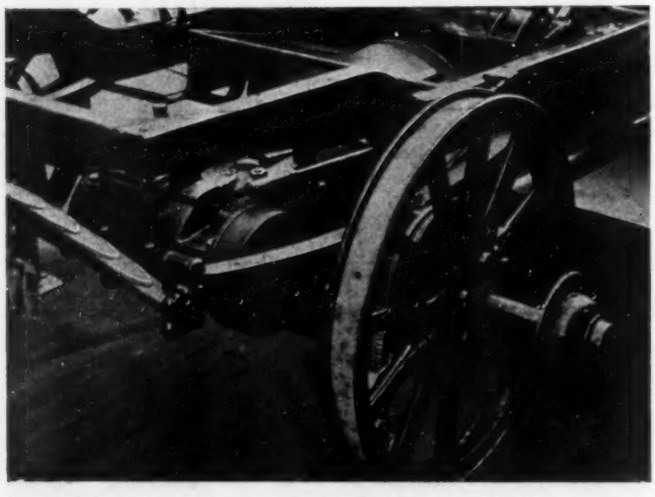


TRANSMISSION, DRIVE AND BRAKES ALL GROUPED TOGETHER.

from breakdowns, is of such vital importance that it will be interesting to note the experience of cab companies in this respect. It is rather early to form an opinion, for the New York Taxicab Company only commenced operations this year, but their report is that the vehicles are thoroughly satisfactory and will not entail unreasonable repair expenditure when undesirable drivers have been weeded out. A glance round the temporary repair shop at Sixtieth street shows plainly that unskilled driving is chiefly responsible for laying up cabs. A few of the more serious accidents have been caused by collisions with trolley cars and other vehicles—it is declared that all the users of the streets are not lovers of the taxicab, and will gladly take the opportunity of putting the small automobiles in a tight corner—but the majority are out of running through gears ground down as the result of the most unskilled handling. When all arrangements are completed for the importation of parts and the company is installed in its model station now under consideration, it is calculated that never more than 5 per cent. of the cabs will be held up for repairs, this including cases of accident.

HORSE DRIVERS FEEL AUTO COMPETITION.

New York's horsecab drivers went on strike for a period of twenty-four hours this week. They had demanded an increase of wages to $15 a week for seven days' work, with twelve hours a day off duty. The officials of the men's unions finally agreed to accept $15 with ten hours off out of each twenty-four and two additional hours for dinner and supper. Taxicab competition is declared to have made the horsecab business unprofitable.



SHOWING HOW LIVE AXLE IS WITHDRAWN FROM GEAR BOX.

NO CHAINS IN GREATER NEW YORK PARKS.

"Can't come on here with them chains on," said the bicycle policeman on duty last Monday morning at the entrance to Riverside Drive to an astonished automobilist who was bound uptown. There was some show of remonstrance at first, but the man at the wheel was soon made to see that resistance was useless, for the edict had gone forth by the Department of Parks that from that day forth automobiles equipped with tire chains must keep off many of the roads they most liked to frequent.

The Board of Parks had been struck with the fact that the highways under its control were in a deteriorating condition and immediately sent out the following order:

"No automobile or horseless or other vehicle wearing chains over the tires of their wheels shall enter the public parks or the traffic roads under the jurisdiction of the Board of Parks, without permission of the commission having jurisdiction. This rule and regulation shall take effect December 16, 1907."

As the commissioners' jurisdiction covers Central Park and nine of the most popular drives in Manhattan, thirteen parkways and drives in the Bronx, and all the important drives and macadam roads in Brooklyn, its effect on automobilists was considerable. Those who were unaware of the new order until

C. H. TANGEMAN IN THE NEW HOL-TAN RUNABOUT.

they were peremptorily told to stop—and they appeared to be many—had to choose between continuing on the selected highways without chains or choosing another route; the latter was more generally adopted.

One well-known automobilist, commenting on the regulation of the Board of Parks, appears to have voiced the sentiments of the vast majority of those owning and driving cars when he declared as follows: "The action of the authorities in barring tire chains from practically all the parkways in Greater New York is preposterous. I maintain that a half-inch toe calk on a horse driven into the pavement under the momentum of the weight of a 1,200-pound horse is necessarily of much greater damage to the roadway than the continuous tread of an automobile. Apart from the debatable question of damage done, what is a parkway for—to look at or to use? If it is built for use, then there is no reason or any justice in an arbitrary discrimination in favor of the horse. Why not put mufflers on the horses and require pedestrians to use tennis shoes or close the park entirely except for the use of city officials?"

It will be noticed that no mention is made in the regulations of any other anti-skidding device than chains. Steel studded tires and the numerous other appliances used on the automobiles with a view to overcome the tendency to skid on greasy surfaces are left unmolested.

GENERAL VIEW OF THE BERLIN "AUTOMOBIL-AUSTELLUNG," OPENED OFFICIALLY BY PRINCE HENRY ON DECEMBER 5.

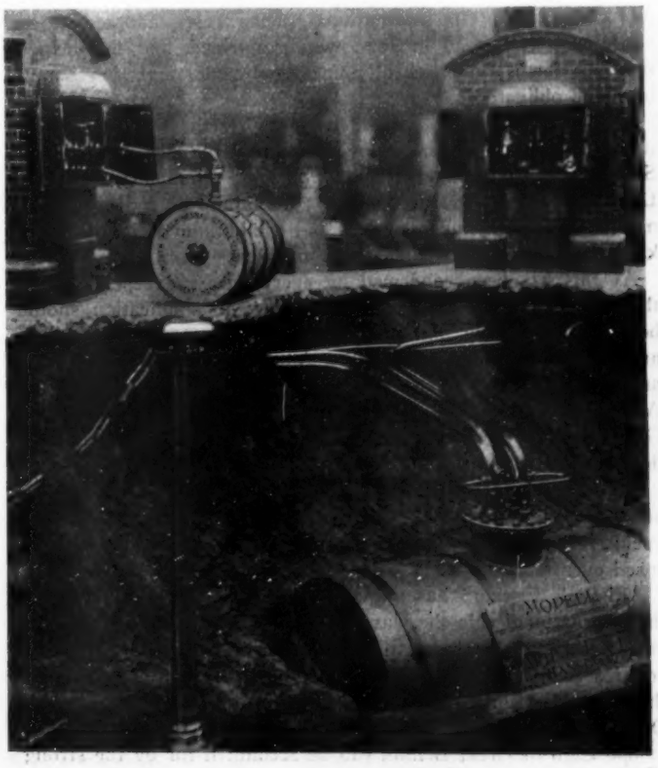
GERMANY'S NATIONAL SHOW.

BERLIN, Dec. 5.—In keeping with its aggressive policy of fostering the industry in every possible way, the German Government has always officially recognized the automobile show and royalty's gloved hand usually presses the button which nominally throws the brilliant collection of the best that the Fatherland and many of its competitors can show in the way of automobiles and accessories open to all who have the price of admission. No less a personage than the Kaiser himself inaugurated this custom, but for the past two years his place has been taken by his personal representative, Prince Henry, who did the customary honors to-day. The ceremony took place at 11 o'clock this morning, when the show was officially declared open.

The exhibits are located in "Exposition Hall"—a large building that lends itself to the purpose well and which is situated close to the Zoological Garden, in the very best quarter of the city. While German makers, as well as a German flavor, predominate, foreign cars are well represented, exhibits both from the Paris Salon and Olympia having been sent here intact. This is responsible for much of the striking contrast that is evident among the exhibits, for as a rule the home manufacturers have not gone to the expense of preparing elaborate booths. One of the chief distinguishing features of the Salon exhibits was their lighting effects, and, transplanted to this atmosphere, they are almost glaring in their brilliancy by comparison with those among which they are found.

But as a whole the show is representative of the German industry, as well as of the extent to which France, Belgium, Italy and England are interested in Germany as a market for their surplus products. Most of the prominent makes from each of the countries in question is represented, but there seems to be more or less of a feeling that competition is getting very keen for the Continental outsider. This, however, has not discouraged the American maker, and the Ford cars, which are becoming equally as well known abroad as at home, have been the object of as much attention here since the opening as they are said to have attracted at the Paris Salon a few weeks ago.

Details expresses in a word the technical end of the show, for changes are confined practically without exception to those small matters of design and construction that generally escape any but the trained eye, and it would require a volume to attempt to describe the many small changes here, most of them of no particular moment, and some of them probably of doubtful value. An excellent example of the thoroughness of the Teuton is shown in the preparation of one of the exhibits of a safety system of fuel handling, which is illustrated by one of the photographs.



MODEL EXHIBIT, SHOWING MANNER OF INSTALLING FUEL SYSTEM.

"SHALL SALON BE HELD ANNUALLY OR EVERY OTHER YEAR?"

PARIS, Dec. 10.—Shall there be a Salon in 1908? is the question which is agitating automobile France. Immediately the doors of the Grand Palais had been closed the Committee of the Chambre Syndicale de l'Automobile, which with the Automobile Club of France is responsible for the annual demonstration, met in Paris and decided to put the following question to all its members: "Shall the Automobile Salon be held annually or every two years?"

It will be several weeks before a decision is arrived at, but meantime those most interested are keenly discussing the pros and cons of the question, and public opinion is being turned into fixed channels. The enormous expense of annual shows as at present organized, their unsettling influence on trade, and the necessity for creating annual models, whether there is any room for improvement or need of change or not, have caused manufacturers to ask if it is not possible to break away from the annual exposition.

The Marquis de Dion, vice-president of the Automobile Club of France, declares that annual shows are a necessary evil, and that their burden is especially heavy upon the more important firms. Judging it from a sporting standpoint, or the viewpoint of the automobile user, it must continue to be held. To abandon it for one year would simply be to transport the automobile market to another country.

Rene de Knyff, of the Panhard Levassor firm, is strongly against a show in 1908, if an agreement can be arrived at with the Royal Automobile Club for the suppression of the British show also. This he believes to be quite possible, for English firms are no more enamored of an annual exhibition than are the leading French houses.

Emile Mors, of the Mors firm, is of practically the same opinion. If a determined effort is made by French makers to obtain an automobile show at intervals of two years, he believes that the British authorities will join them.

Henry Brasier declares emphatically that the industry is too advanced and types too well developed for there to be any necessity for an annual show.

It will probably be found that the question will resolve itself into obtaining an agreement with England, either for alternate shows in Paris and London or for shows every two years in both capitals, dates being arranged so as not to clash. Considerable rivalry has sprung up between London and Paris during the past three years, the former city, while admitting her inability to organize such a spectacular display as that at Paris, making every effort to wrest the business supremacy from her rival. If only the best interests of the industry were considered, doubtless some agreement would be arrived at whereby the Grand Palais and Olympia would be closed in 1908; but international jealousies must be reckoned with, and should the national body decide to remain idle next year it might not be easy to prevent some less responsible body uniting sufficient makers to hold a small but mischievous exhibition.

TOURING RULES MORE DIFFICULT THAN RACING CONDITIONS.

PARIS, Dec. 7.—An international formula for touring competitions appears to be more difficult of attainment than the same thing for racing events. At the meeting of the International Association of Recognized Automobile Clubs, held at the Automobile Club of France, recently, the matter was discussed, but no other result arrived at than to refer the matter to a special committee. The international racing rules, adopted at the conference at Ostend in July, were confirmed, and the suggestion put forth, but apparently not acted upon, that they should be made obligatory.

The Ostend meeting, attended by representatives of the national clubs of England, France, Germany, Hungary, Italy, Spain, Sweden, Switzerland, Holland, Portugal, Roumania, Belgium, Denmark and Austria decided on a maximum bore of 155 millimeters for four-cylinder engines and a minimum weight of 1,100 kilos, without oil, gasoline, tools and spars tires.

As this has been confirmed by every nation except America, the Italian delegates are of opinion that its application should be made obligatory and not optional. European automobilists are at a loss to understand why America was not represented at the Ostend and Paris conferences. One of the two foreign A. C. A. delegates attended the meeting held after the French Grand Prix of 1906, but since then the United States has been dead to international automobile deliberations.

A project is now before the International Committee to appoint an International Racing Board from its members, to deal exclusively with the regulations for and conduct of international speed events.

Although England has not adopted for her only speed event the international rule she was so largely instrumental in framing, and America, according to cable reports received, practically adheres to the obsolete Gordon Bennett conditions, races under the 155 millimeter rule will be the feature of the coming season. Doubtless the adoption of a four-inch bore by the Royal Automobile Club of Great Britain can be accounted for by the strong feeling existing in England against racing on the highways. Britishers have always tried to convince themselves that the Tourist Trophy competition was a touring event; when they abandoned the fuel consumption rules for a limited bore they endeavored to keep to vehicles of about the same power. To have adopted the international rules would have announced the race as a pure speed test, and doubtless diminished the chances of obtaining a course in the Isle of Man. Their policy will make the race a local and not an international event.

In addition to all the French firms making a practice of competing in international races, this year several who have not been at the starting line for some time will build cars under the 155 millimeter rule. Among them are mentioned Mors and Charron, one of the cars of the latter firm to be handled by Venus, mechanic of the late Albert Clement.

Belgium and England will help to increase the ranks, while Germany will be represented by Benz, in addition to Mercedes. All three Fiat cars are already on the road, and at least half a dozen French firms are sufficiently advanced to be able to test out very early in the year.

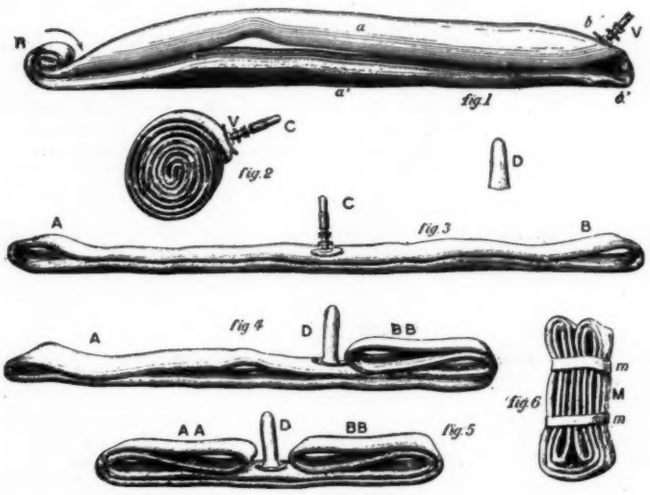
Contrary to previous years, the Ariel firm of England has produced its Grand Prix racers already and commencel road tests. The cars have four-cylinder engines of 150 millimeters bore, which it is calculated will give 125 horsepower at 1,500 revolutions. Other features are high-tension magneto, disk clutch, four speeds and reverse by sliding gear transmission, and shaft drive. Deasey, another Britisher building under the 155 millimeter rule, is declared to have his cars ready, but particulars are not available. Continental makers are not anxious to give details.

A meeting has been held between the Racing Board and the municipal authorities of Dieppe regarding the adoption of the Dieppe circuit for next year's Grand Prix. No official decision has been arrived at, but it is looked upon as almost certain that the same course will be used, the Dieppe district being willing to give a subsidy of $10,000.

CORRECT MANNER OF FOLDING AN INNER TUBE

NUMBERS of automobilists, especially among beginners, do not know how to pack inner tubes or how to carry them on their cars, writes Baudry de Saunier in *Omnia*. To fold a tube in the most satisfactory manner the valve should first of all be removed in order that the air may easily escape during the later operations; it is impossible to fold with valve in.

The tube should then be arranged, as shown in Figure 1, the operator placing himself at *R*. This work should be done on a table, a plank, or any flat surface, providing it is free from oil



SHOWING THE VARIOUS STEPS IN THE PROCESS OF FOLDING.

or any liquid, and especially from gravel or grit. If no table is available, it can be done by holding the tube against one's chest, but the operation is then more difficult and the operator's clothes are not improved.

Whatever may be the support, the tube should be rolled up as tightly as possible, beginning at the end farthest removed from the valve. The air is thus partly driven out through the open valve tube; the emptying of the tube, however, is not complete, owing to the bending of the tube at *bb* at the foot of the valve. While holding tightly the rolled part, *R*, with the left hand, draw to the rear from time to time the opposite end, *V*, to allow the imprisoned air to escape. Continue to do this until the tube is completely rolled, as shown in Figure 2.

Still holding the tube as tightly as possible, insert the valve and put on the cap *C*, screwing up as tightly as possible with the fingers, but not on any account using the pliers. The inner tube is now completely flattened, and it should always be brought into this condition (if it is not so already) every time it is desired to mount it on a wheel. When perfectly flattened the mounting of a tire is enormously simplified and at the same time it is largely preserved from nipping or blows from a lever or other tire tool. The results are well worth the little labor.

Next open the tube out again, as shown in Figure 3, the valve being in the center and uppermost. If you have any real care for your tires you will cover the valve with a rubber finger, *D*, similar to the rubber fingers sold at all drug stores. If one of these is not available you will make one out of a piece of cloth. This covering protects the tire against the ill effects sure to arise when the valve is allowed to rub against the rubber.

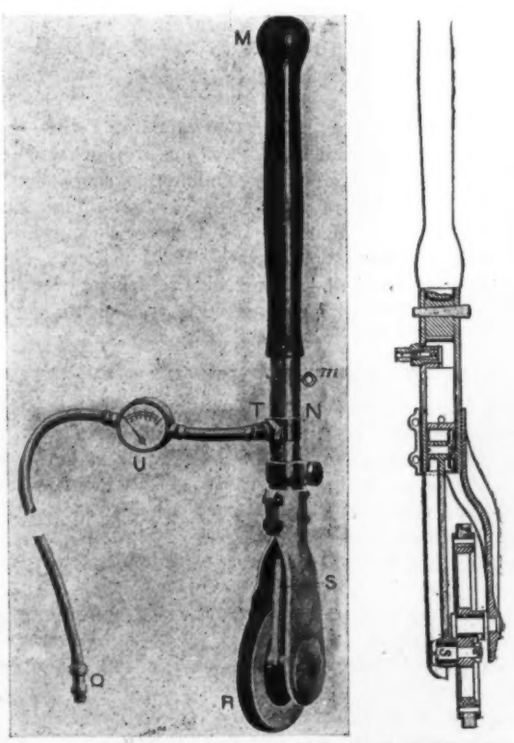
Now fold each end of the tube inwards towards the valve, as shown in Figures 4 and 5, forming the flat package, *M*, which should be secured by a couple of tapes, or, better still, by a couple of rubber bands made out of strips of an old tube.

If the tire is punctured or without valve, it is useless to attempt to fold it, for although you mave drive out the air it will enter again by the hole or through the valve as soon as pressure is removed. Thus, as soon as it has been rolled as shown in Figure 2, fasten it securely with tape in order that it may not lose its shape, and leave it in that condition. The particular advantage of this is that it enables at a glance to distinguish between perfect and imperfect tubes, the perfect ones being folded and the punctured ones rolled.

Each tube should be placed in one of the waterproof bags specially made for that purpose. This is only a detail, but it is a very important one. The bag protects the tube better than any other kind of packing, preserving it from contact with tools, or other rough objects, and keeping it out of the way of oil and water. If a handful of French chalk is thrown into the bag the tube automatically chalks itself and prepares itself for being mounted within the tire. If no bag is available, the tube should be wrapped in a piece of clean cloth and secured with a string. When on the road carry your packed tubes in a separate box and not in the common compartment where oil cans and tools struggle for the most comfortable position.

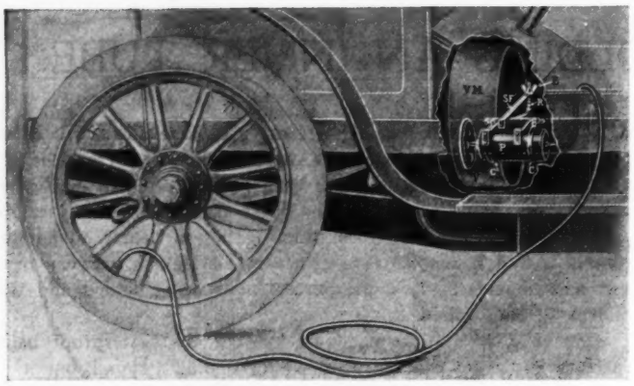
TWO SUBSTITUTES FOR THE TIRE PUMP.

Substitutes for the tire pump have generally been put on the market in the form of mechanical devices designed to be operated by the engine; their success has only been partial, users as a rule being unwilling to accept the responsibility of the extra complication. Compressed air tanks have met with some success, and doubtless will come into general use when minimum weight has been attained. A new principle has been adopted



PORTABLE TIRE PUMP OPERATED FROM ENGINE FLYWHEEL.

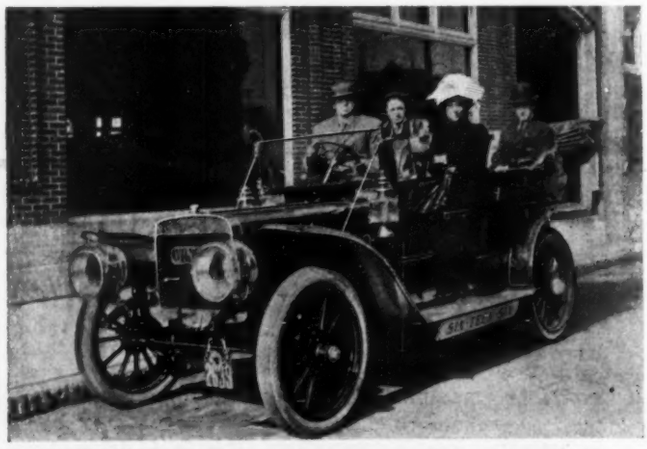
in an automatic inflator produced by Grovelle & Arquembourg, the French firm of radiator makers. Here the engine is employed for inflation, but there is no extra fixed mechanism on the chassis and simplicity is carried out to a fine degree.



FIXED TIRE PUMP DRIVEN BY FRICTION FROM FLYWHEEL.

In the illustration, which has been reproduced from *Omnia*, the complete apparatus is shown ready for use. It consists of a small portable pump, the piston of which is united to the leather faced flywheel *R* by the connecting rod *S*. *M* is merely a wooden handle connected to the body of the pump by the pin *m*. A short length of piping, *T*, carrying a pressure indicator, *U*, is connected to the body of the pump at *N*. At the extremity of the pipe a length of rubber tubing is connected up at *Q* and carried to the tire valve. To put the instrument into operation all that is necessary is to connect the tubing to the valve, lift out the floor boards and place the flywheel *R* on the flywheel of the engine. When the required pressure is shown on the indicator the operation is stopped, the wooden handle disconnected, and the pump stowed away in the tool box. All that is necessary to keep the pump in condition is to take down the piston from time to time and spread a little vaseline over the rings.

Although taking its power from the flywheel of the motor, the Vadam mechanical pump, another European production, is of quite a different order. As will be seen from the illustration reproduced from *The Car*, it is attached to the frame in such a way that the wheel of the pump is driven by friction from the engine flywheel. Attachment is merely a matter of bolting a bracket of 1 inch by 1-2 inch wrought iron to carry the inflator and above it the support for the adjusting screw, the leather faced wheel being brought into or out of engagement with the engine by means of a simple thumbscrew arrangement. The pump itself consists of eight cylinders containing four double pistons, which are situated round a center disk grooved to engage with a roller fitted to each set of pistons. The disk is directly driven on ball bearings by the driving wheel. With a sufficient length of piping, connection is made to any wheel.



"BOB" FITZSIMMONS AT THE WHEEL OF THE WINTON.

The celebrated ex-champion pugilist is a devoted admirer of the Winton "Sixteen-Six." Immediately back of Fitzsimmons is seated John S. Johnson, famous as a cyclist and skater, who is now connected with the Winton Branch at Pittsburgh.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
Dec. 28-Jan. 4..—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
Feb. 21-29.....—Newark, N. J., Orange A. C. Building, New Jersey Automobile Trade Association and New Jersey Automobile and Motor Club.
Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dai H. Lewis, manager.
Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
Jan. 25-Feb. 1..—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dai H. Lewis, manager.
Feb. 20-Mar. 7..—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show. J. H. Dressel, manager.

FOREIGN.

Shows.

Dec. 5-22.....—Berlin, Germany, Automobile Show.
Dec. 21-Jan. 2..—Brussels, Show, Palace of the Cinquantenaire.
Jan.18-Feb.2,'08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.
May 6-20.....—Moscow, Russia, International Automobile Exposition, Automobile Club of Moscow.

Races, Hill-Climbs, Etc.

April 1-13.....—Monaco Motor Boat Races and Motor Boat Exhition, International Sporting Club of Monaco.
April 25-May 25—Industrial Vehicle Competition, Automobile Club of France.
May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
May 10.....—Sicily, Targa Florio, Automobile Club of Italy.
June 1-18.....—Reliability Trials for Pleasure Cars, Automobile Club of Great Britain.
June 9-17.....—Touring Competition for the Prince Henry of Prussia prize, Germany, Imperial Automobile Club of Germany.
June 20-July 5..—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
July 13-17.....—Ostend, Belgium, International Race Week, Automobile Club of Ostend.
July 20-30.....—Ardennes Circuit Races and Coupe de Liedederke, Automobile Club of Belgium.
August, 1908...—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)
August 29-30...—France, Mont Ventoux Hill Climb, Vauclusien Automobile Club
September 1-8 .—French Voiturette Contest, L'Auto.
September 27 ..—France, Chateau-Thierry Hill Climb, L'Auto.

PRINCIPLES OF SPEED AND DISTANCE RECORDERS

By CHARLES B. HAYWARD.

IF he were to give it a thought, the why and wherefore of the neat little instrument adorning the dashboard of his car that mutely indicates speed and mileage would considerably puzzle the average man to whom mechanics are a riddle. But he seldom lets it bother him—any more than does the train of action in his watch which transforms the pent-up energy of the main spring into the accurately measured beats of the second hand, and if interrogated on the point, doubtless his answer would consist of "Oh, something like the inside of a watch." So far as finish, delicacy of its component parts, accuracy in operation and a few kindred qualifications are concerned, a good speedometer may be correctly compared with a watch, but there the parallel ends. The chief difference between the two is to be found in the fact that the watch is an entirely self-contained piece of mechanism, while all speed and distance recording instruments naturally require power from an external source for their operation, in view of the fact that they do not operate independently, but merely as a part of the vehicle to which they are attached. Familiarity with mechanical movements and principles makes it evident that such a device may be constructed with any one of several differing principles as its basis of action, but in the majority of instances that of the time-tried ball governor of the steam engine has been utilized as the groundwork, so to speak. In other words, centrifugal force. Just as the elevation of the two solid spheres of metal of the familiar two-ball governor is made to cut off the steam and reduce the speed of the engine when the latter exceeds a predetermined limit, so the tendency of any suspended weight to fly away from its point of suspension, or attachment, when revolved at a high rate of speed, provides the actuating force which moves the pointer of a great many of the speedometers on the market to-day. Instead of taking the same form as that of the steam-engine governor, however, the chief moving part of the speed-indicating instrument is generally made annular in shape, taking the form of a wheel with a very heavy rim and but a single pair of spokes passing diagonally across its center and serving to pivot it on the shaft, which is directly driven from the forward wheel. As is the case with the watch, here the comparison between the governor and the speed indicator also comes to an end, because the conditions under which the two devices are designed to operate are about as widely separated as the poles, and the chief difficulty in designing an instrument that would accurately record speed under the rough treatment inevitable when placed on such an unstable platform as the automobile was found in the shocks to which the latter is continually being subjected when run over rough roads at high speeds. To control the centrifugal force set up by the heavy annular weight when revolving at high speed, a stiff restraining spring is provided. Against this the weight must act before it can move the indicating pointer on the dial. As the speedometer is usually "geared up," that is, designed to run at a much higher rate of speed than the wheel to which the operating gears are attached, the instrument generally attains sufficient momentum in its heavy revolving member to accurately indicate speeds as low as five miles an hour, though, of course, it begins to act long before that figure is reached, and as the acceleration of a heavy, rapidly moving body is uniform, the movement of the hand is gradual and not jerky, as might at first appear to be a necessary sequence.

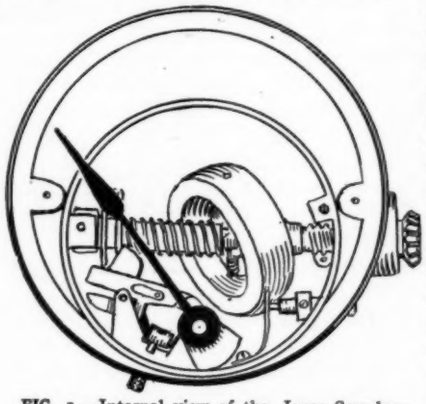


FIG. 1.—Internal view of the Jones Speedometer, showing the essentials of a typical centrifugal instrument.

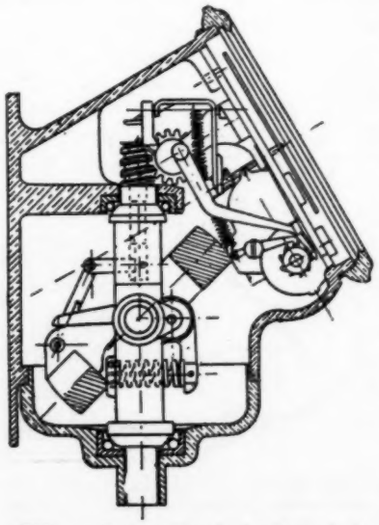


FIG. 2.—Cross sectional elevation of the Index Speed Indicator, illustrating the arrangement of a vertical centrifugal type.

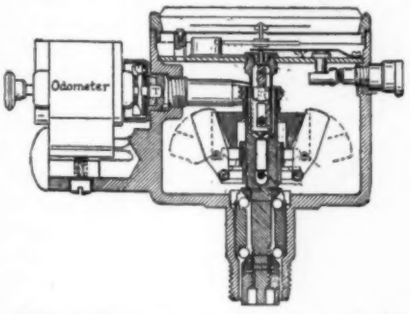


FIG. 3.—Part sectional view of the Loring Speed Gauge, which is of the vertical type, closely resembling a ball governor.

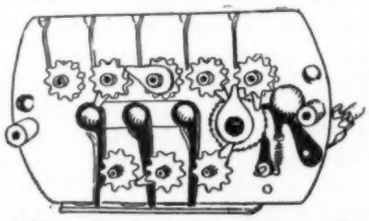


FIG. 4.—Details of the mileage-recording mechanism of the Jones Speedometer, having trip and season dials.

To transmit the movement of the revolving member in one plane to that of the indicating hand, which lies in another, various forms of intermediaries are employed. These sometimes take the form of an arm moved by gearing, though this is one of the points in which some of the instruments of the centrifugal type are distinguished by their simplicity and others by their complication. It will be evident that inertia and momentum are two factors of great importance that the designer of the speedometer must figure with when calculating the size of the parts of the instrument, as the latter's components must be neither difficult to get under way nor hard to bring to a stop, once in movement. For this reason the parts are of a size and weight that make the comparison to the mechanism of a watch justifiable by the casual observer.

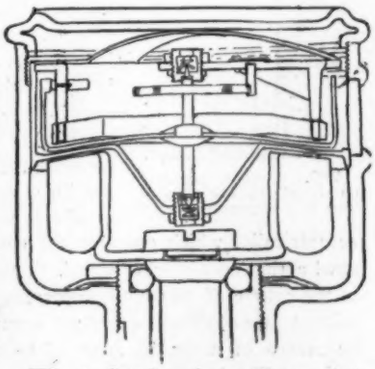


FIG. 5.—Interior of the Warner Auto-Meter revealed, showing the relative positions of the magnet and field ring.

Credit must doubtless be given to the Jones Speedometer as the pioneer in its class, and as the principle upon which it operates is that of a number of other instruments since placed on the market, a detailed description of its working will apply, in large measure, to that of the others, barring a few details that will be noted later. It may most aptly be designed as a

horizontal centrifugal type, as the shaft and ring governor are placed in that manner, the drive being taken through the small bevel pinion seen at the right-hand side. The cut, Fig. 1, illustrates the heavy brass ring, which constitutes the chief factor in the operation of the instrument in the position it assumes when stopped, the hand being at zero. This ring swings freely on pivots mounted on the horizontal spindle driven by the bevel gear, while connected to the ring by a light steel link is a sleeve, free to slide along the spindle. The left-hand end of this sleeve is flanged to form a collar, which is connected to the counterbalanced pointer through the levers shown, and which serves to transmit the movement of the ring at different speeds to the latter. When revolving, the brass ring has a tendency to assume a position at right angles to the spindle, thus drawing the sleeve mentioned along the latter against the action of the controlling spring, so that the finger engaging with the collar on the left-hand end of the sleeve is carried with it. This part of the mechanism is not visible in Fig. 1, but it in turn engages the peculiar-shaped cam shown directly beneath the collar. The cam in question is pivoted on the sliding lever shown, and this in turn is attached at its right-hand end to a small crank on the indicating hand, the pointer spindle being controlled by a hair spring.

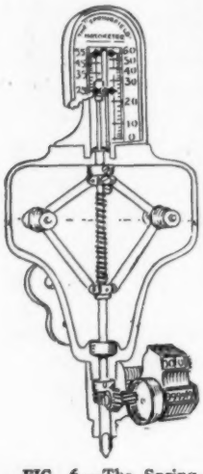


FIG. 6.—The Springfield Motormeter—a true ball governor.

It will be evident from this that the faster the spindle turns, corresponding to an increased speed on the part of the car, the greater will be the tendency of the brass ring to take up a position at right angles to its shaft. But, bearing in mind the varying tension or compression of a spring with an increase in its load, the question will naturally arise, "How can the instrument be made accurate at all speeds over a range from a few miles an hour up to a mile a minute?" In the first place, the dial is calibrated according to the varying control of the spring at different speeds, the divisions accordingly not being uniform over the entire scale, and, secondly, an auxiliary spring is provided. This second spring is carried on the pivots of the ring, and comes into action when the ring asumes an intermediate position; it is not visible in the illustration.

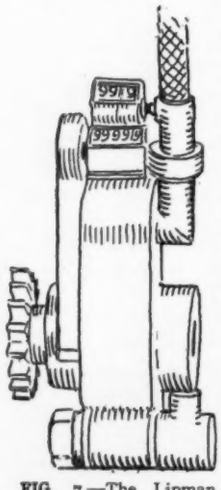


FIG. 7.—The Lipman combined Electric Generator and Odometer.

The mechanism of the mileage recorder of the Jones Speedometer is illustrated in Fig. 4. This device is driven from the main spindle carrying the brass ring by means of a short vertical shaft having gear-teeth cut on its lower end, and engaging with a worm at its upper. The upper end of this vertical shaft carries a pin, set eccentrically, which operates the counting mechanism through a pawl acting on a ratchet wheel. The latter carries a finger, which in the course of its rotation operates the upper train of five intermittent gears. These gears are accurately maintained in position by means of a spring fastened to the plate, the object of this spring being to throw the gears over the center quickly and index them uniformly, so that the figures indicating the mileage always stand centered in the dial openings. The lower train of intermittent gears is also actuated by the finger on the ratchet wheel, and carry the figure disks for the trip mileage. When it is desired to reset this part of the indicator at zero, pressing a small plunger shown protruding through the lower part of the case in Fig. 1, forces the pawl out of engagement, allowing this gear train to be acted upon by the spring, and turning each figure disk until halted by the stop springs on the back of the device. The maximum speed-indicating device consists of a dummy hand and small pin which is engaged by the regular pointer and carries it along to the figure represented by the highest speed attained. As it is carried around the dial, the dummy hand winds up a small hair-spring, but this is prevented from returning the hand to zero when the pointer falls back, by means of a second spring. The latter may be released by pressing a button, and the hand then returns to zero.

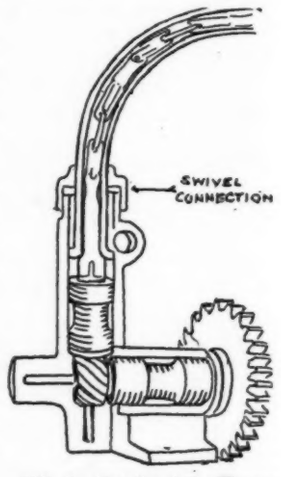


FIG. 8.—Details of the Warner drive connection.

The foregoing is descriptive of the manner in which both the speed and distance-recording apparatus of an instrument of the centrifugal type operates, but even though based on the same principle, other instruments vary considerably in the arrangement of their essentials. For instance, the Index Speed Indicator, shown in Fig. 2, is of the vertical centrifugal type in which the spindle is practically a continuation of the driving shaft, thus giving it the advantage of eliminating the bevel gear drive, in addition to simplifying the intermediate steps in the transmission of the movement of the ring governor to the indicating pointer. It will be seen that a system of articulated levers connects the ring governor to a second spindle in the same plane as the first but not revolving with it. At its upper end this second spindle, which runs on an independent ball bearing, carries a worm engaging with a small pinion at the right, to which is eccentrically attached the lever which serves to set the pointer in motion.

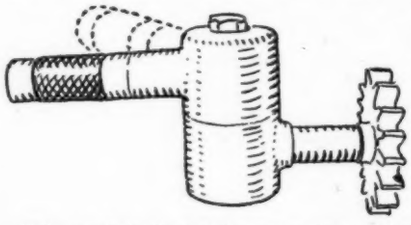


FIG. 9.—Swivelling drive connection of the Stewart instrument showing its range of movement.

The Loring Speed Gauge, which is also of the vertical centrifugal type, represents a closer approach to the time-tried principle of the ball governor than any of those yet mentioned. Its vertical driving shaft enters the case direct without any intermediaries in the shape of bevel gears, and is supported on ball bearings. To this shaft is keyed a small balance wheel, having two weights pivoted at opposite points on its periphery. Under the action of centrifugal force the weights move outward and downward, raising a slotted sleeve by means of pins and rollers, this vertical motion again being transformed into a rotary one through several steps, terminating at a nut turning on a quick-pitch thread. This nut is prevented from rotating, and the indicating pointer is attached directly to the upper end of the threaded spindle which turns through it, thus making the only connection between the rotating shaft and the indicating part of the instrument, a hardened steel pin placed directly at the center of rotation, as will be seen by referring to the exterior view of the Loring shown in Fig. 10. It will also be noted that in this case the odometer is practically an independent instrument, being carried at the side.

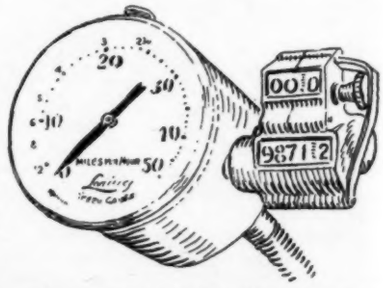


FIG. 10.—The Loring Speed Gauge as it appears on the dashboard of a car.

The Springfield motometer is another instrument of the vertical centrifugal type, but its construction is so simple as to scarcely call for any extended description of its working, the sectional drawing, shown in Fig. 6, illustrating it in its entirety. In fact, it is a ball governor, pure and simple, the spring-controlled weights shown operating a second spindle carrying the indicating hand, and which is free to move vertically. From this it will be apparent that the action of the governor is direct, there being no intermediaries in the shape of multiplying or reducing devices, which accounts for the distinctive type of dial employed. The odometer is a separate instrument and is driven from the main spindle of the instrument through worm gearing.

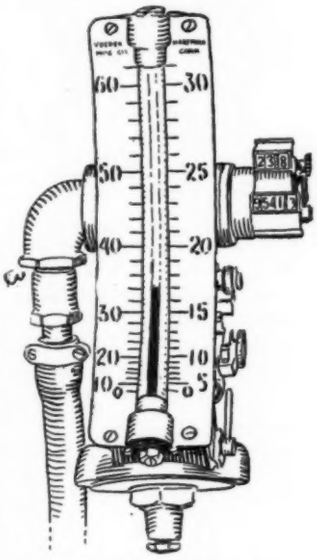


FIG. 11.—Thermometer-like appearance of the Veeder Tachodometer.

A centrifugal type of instrument that differs radically from those already described is the Veeder Tachodometer. In this simplicity has been carried to its extreme. The centrifugal force engendered in a liquid confined in a small vessel, when agitated by a rapidly revolving paddle, constitutes the principle of the Veeder and accounts for the fact that it has but one moving part. This consists of the driving shaft, to which is permanently attached a small paddle-wheel, revolving in a predetermined quantity of colored liquid which is forced upward through a glass tube from which the air has been exhausted. This tube is fastened to an accurately calibrated scale, the reading being similar to that of a thermometer—an instrument which the Veeder resembles at first glance. It has the advantage that all its operations are based on the natural laws of gravity and centrifugal force, and having but one moving part, it remains permanently accurate regardless of the length of its service.

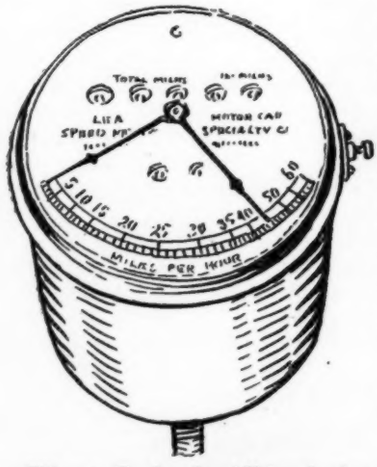


FIG. 12.—The Lea Speed Meter, showing record of maximum speed hand.

This suffices to sum up the various types of centrifugal instrument at present on the market, but does not comprise them all by any means. For instance, there are the Stewart and American instruments of the horizontal centrifugal type, both the product of one concern; the Hicks Speed Indicator, in which the intermediate mechanism between the ball governor and the hand has been simplified to an extent where it consists of but two springs; the Lea Speed Meter, which is of the vertical centrifugal type and is extremely simple in its operation; the "Perfect" speed indicators, made by one of England's oldest watch-making firms, and the "Ever-Ready," also of the centrifugal type and which are made in quite a variety of styles. Being the product of a concern that has devoted its attention exclusively to the manufacture of chronometers and other instruments of precision for several generations past, it naturally follows that the "Perfect" instruments should be distinctive in design and construction. A series of controlling springs is employed, thus making the instruments accurate at all speeds, a quality that is further contributed to by the fact that each dial is hand made to correspond to the instrument for which it is intended. The "Velocimeter" is another centrifugal instrument, which, as its name signifies, is intended only to indicate speed.

Electrical and Magnetic Instruments.

All of the instruments thus far considered are of purely mechanical types, and as such afforded great play for the ingenuity of the designer in making them simple or complicated, but it is only by substituting such forces as magnetism and electricity for mechanical operation that the extreme of simplicity is realized. The Warner Auto-Meter utilizes the magnetic principle, and the sectional view of its interior, shown in Fig. 5, illustrates the method of its working. The actuating force consists of a magnet which is shown attached directly to the ball-bearing driving shaft where it enters the case. Supported in sapphire pivot bearings just above the magnet is a field ring, and attached to the latter is the dial, which is of aluminum and annular in form. This field ring completes the magnetic circuit, and it will be apparent from the description thus far that there is no mechanical connection whatever between the driving shaft and the indicating dial, nor any delicate moving parts in constant service. The principle of the instrument is that of magnetic drag, the tendency of the magnet when revolving to pull the dial round with it in the same direction as it is rotating. This rotation of the dial is naturally proportionate to the speed of the magnet, but it is controlled by a hair-spring tending to return it to zero at all times. The strength of this spring increases directly in proportion to the angle of displacement caused by the turning of the dial, thus making it possible to mark the latter with uniform spaces for the various speeds. As the field ring and the dial are combined and the magnet acts directly upon the latter, there are but two parts to the instrument, barring the case, so that the great simplicity of the magnetic principle will be evident.

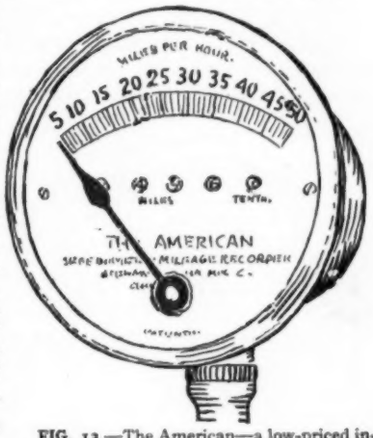


FIG. 13.—The American—a low-priced instrument made by the manufacturers of the Stewart.

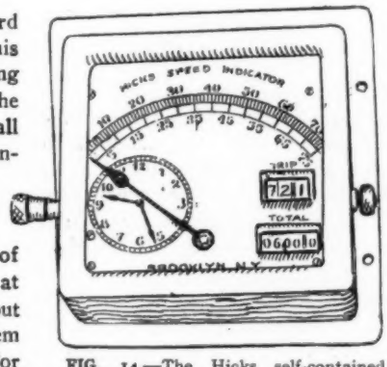


FIG. 14.—The Hicks self-contained speed indicator, mileage recorder and clock.

But the speed indicator reduced to its very lowest terms of simplicity is to be found in the Lipman electrical instrument. Scientific investigation extending over a long period of years has made possible the measurement of an electric current to a degree of accuracy unattainable in other fields, and this, in a word, represents the principle of the Lipman. It consists of a small generator driven directly from the front wheel

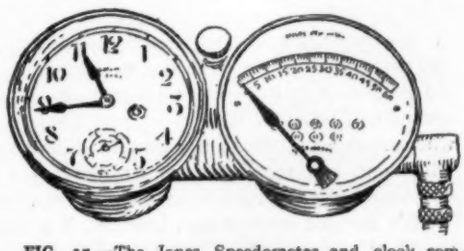


FIG. 15.—The Jones Speedometer and clock combination illuminated by a small electric light.

of the car, and the indicating portion of the instrument, which is nothing more nor less than a millivoltmeter. The generator is of the simple, permanent field type, with a single horseshoe magnet and H armature, and is wound to generate a small current at a potential of one volt, when turning at a speed equivalent to 60 miles an hour on the part of the car. As the generator is of the induction type, employing no brushes or commutator, and the usual flexible shaft is replaced by a cable conveying the current to the indicator, it will be evident that the number of small parts liable to defection has been reduced to its possible minimum in the Lipman. The driving shaft of the generator is of hardened steel, accurately ground, and runs on ball bearings, while the entire device is inclosed in a moisture and dust-proof case. As the voltage generated is always directly proportional to the speed and is sensitive to the slightest variations in the latter, the instrument can be made very accurate, the dial being calibrated to read in miles per hour, instead of fractions of a volt. The generator is directly attached to the steering knuckle of either of the front wheels and is combined with a season and trip odometer.

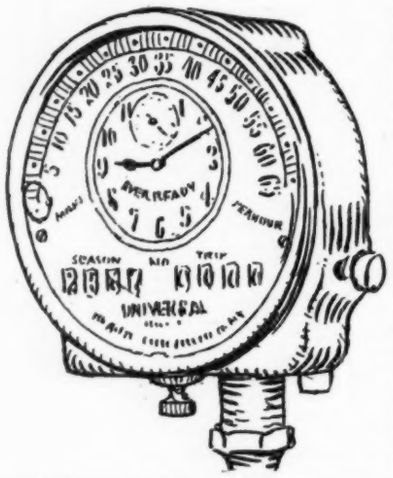


FIG. 16.—The Ever-Ready Universal, representing a very compact type of combined instrument.

While the power necessary to drive a speed-indicating instrument is naturally an entirely negligible factor, that of maintaining the drive in efficient working condition has often proved to be quite the reverse, particularly in earlier days, when the condition of this essential as revealed by cars finishing endurance tests was often deplorable. With the exception of the Lipman electrical instrument, in which the generator alone is driven direct, the power to operate the device is conveyed from a gear fastened to the front wheel through a second and much smaller pinion and a flexible shaft, so that the governor ring, or ball governor, of the speed-indicator revolves several times as fast as the front wheel of the car. This, however, finds an exception in the case of the Perfect, which is friction-driven at a speed but twice that of the car wheel, thus distinguishing it from the majority of other centrifugal instruments in two important respects. Trouble was at first experienced with the flexible shaft coupling at the front wheel, taking the shape of numerous breakages, which have been overcome by a number of ingenious devices, two of which are shown by Figs. 8 and 9, the first being a feature of the Warner, and the second, part of the Stewart and American instruments.

Something About the Speedometer's Externals.

It has been facetiously remarked that the variety of speed and distance-indicating instruments on the American markets range in appearance "all the way from a steam gauge to a cash register," and when some of the types that have come and gone are recalled, the remark does not appear entirely unjustified. Simplicity and neatness of external appearance are, however, as great an asset, where such an instrument is concerned, as its accuracy and durability, and this will be borne out by casual observation of the dashboard of the average car and the instrument that adorns it. Within the past year or two, however, it is noticeable that instruments greatly exceeding in size and apparent complication those of former days, are becoming more prevalent. But this is for an entirely different reason. It has become common to combine several instruments in one, in keeping with the tendency to clear

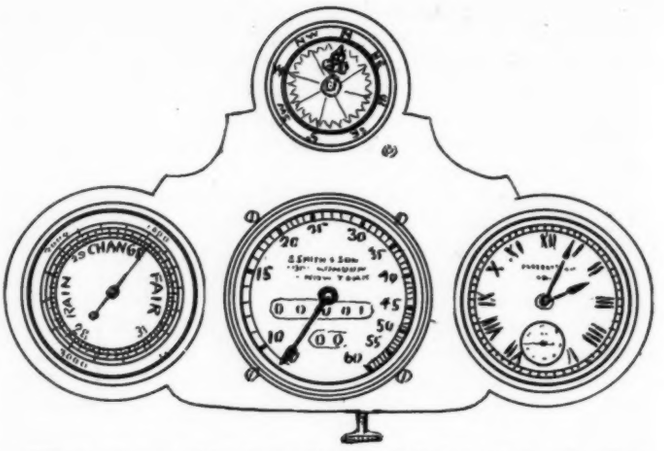


FIG. 17.—A most elaborate combination of Perfect speed and mileage recorder, clock, barometer and compass, all mounted on the same base.

the dash of the modern car of all superfluous attachments, so that now it is nothing unusual to find the timepiece and speedometer combined, as for example, in the Jones combination instrument shown in Fig. 15, and the trend in this direction has been carried to the extent illustrated by the Perfect speed indicator, clock, barometer and compass, and this does not represent the extreme attainable, as a signaling device might be added, even to this elaborate array. A combined clock, speed indicator and signaling device of the same make is illustrated in Fig. 18, which also serves to show the manner in which the readings may be duplicated by the use of a second instrument placed in view of the passengers, but driven from the same shaft. In addition to the types of speed and distance-recording instruments familiar to the autoist by their presence on the great majority of pleasure cars, there is another class which will shortly come into use in numbers, but which are, after all, designed more for use on the commercial vehicle than on the pleasure car, particularly as they are equally applicable to the horse-drawn or power-driven vehicle. One of the first of these to make its appearance was the Phelps Vehicle Recorder, which is being marketed by the same concern that handles the Lea Speed Meter. It differs radically from others in that the making of its record of stops, starts and elapsed time of stopping and running, night and day, requires no mechanical connection with any moving part of the vehicle itself. The record is made on sensitized paper disks.

In addition to the Phelps, there are two, or probably more, instruments which have been pretty thoroughly tried out in service and have proved satisfactory, but as yet have not been placed on the market. They are intended for pleasure as well as commercial use, and consist of a combined chronograph and speedometer. The chronograph record takes the form of a strip of paper, showing all stops, the distance covered, rate at which it was run, and other particulars which make it easy to keep a close check, either on a chauffeur or the driver of a vehicle.

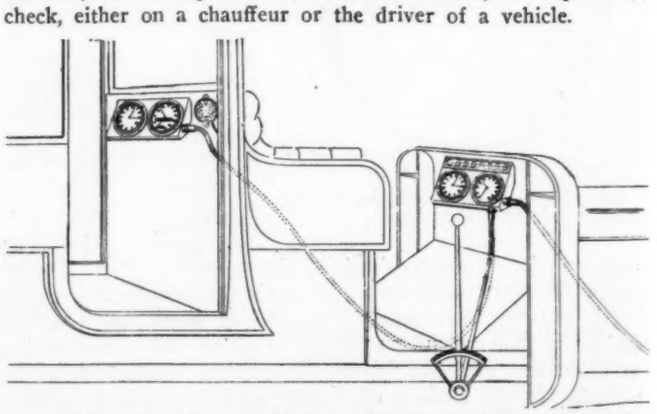


FIG. 18.—Perfect speed, distance and time recorder combined with signaling device, arranged to show in two places from the same drive.

LETTERS INTERESTING AND INSTRUCTIVE

RESTORING SCRATCHED CELLULOID FRONTS.

Editor THE AUTOMOBILE:

[1,017.]—Will you kindly republish the two articles printed a year or two ago, giving (1) the process for making clear again celluloid fronts which have become cloudy, and (2) the temperatures at which different strength solutions of calcium chloride freeze? If you do not care to republish, kindly advise me of the dates of these two articles. C. H. HOWE.

Denver, Colo.

Editor THE AUTOMOBILE:

[1,018.]—Some time ago (about Spring, 1907), under the head of "Letters Interesting and Instructive," I noted an article entitled "How to Restore the Brilliancy of a Scratched Celluloid Window." Can you refer me to the number in which this article appeared?

Bridgeport, Conn. A. A. LYMAN.

In answer to the foregoing inquiries we are reproducing herewith the answer of the correspondent who came to our aid in this matter. His instructions are as follows:

In a recent issue of "The Automobile," that of December 20, 1906, one of your readers asked, in question 508, what could be done to restore the surface and transparency of a celluloid window that had become scratched and dimmed by use. You admitted your inability to solve the problem, and said you would be pleased to have any reader help the inquirer out. I think I can do this. If a worn sheet of transparent celluloid is varnished on the worn side (on both sides if both sides are worn) with a very thin, even coat of any transparent varnish, it will recover practically its original condition and appearance. Probably the best varnish for the purpose is made by dissolving a quantity of transparent celluloid in acetone, making the solution exceedingly thin, and applying more than one coat if necessary. HARRY CLINTON.

Asbury Park, N. J.

Regarding the subject of anti-freezing solutions, herewith are formulæ that will be found efficacious:

Calcium chloride—Ten per cent. Solution freezes at 15 above zero, Fahrenheit.

Calcium chloride—Fifteen per cent. Solution freezes at 5 above zero, Fahrenheit.

Calcium chloride—Twenty per cent. Solution freezes at zero, Fahrenheit.

Calcium chloride—Twenty-five per cent. Solution will not freeze at zero.

Wood alcohol—Ten per cent. Solution freezes at 15 above zero, Fahrenheit.

Wood alcohol—Fifteen per cent. Solution freezes at 5 above zero, Fahrenheit.

Wood alcohol—Twenty per cent. Solution freezes at 2 above zero, Fahrenheit.

Wood alcohol—Twenty-five per cent. Solution freezes at zero.

Glycerine—Ten per cent. Solution freezes at 20 above zero, Fahrenheit.

Glycerine—Fifteen per cent. Solution freezes at 15 above zero, Fahrenheit.

Glycerine—Twenty per cent. Solution freezes at 8 above zero, Fahrenheit.

Glycerine—Twenty-five per cent. Solution freezes at 5 above zero, Fahrenheit.

Wood alcohol and glycerine soften rubber connections after a time, but this would be a small matter.

DRIVING REGULATIONS IN NEW YORK CITY.

Editor THE AUTOMOBILE:

[1,019.]—Would you please send me circulars concerning rules of driving an automobile in New York City? If not able to furnish me with such, inform me where I can obtain them.

Cohoes, N. Y. THOMAS ROULIER.

These rules are obtainable on application to the Police Department, City of New York, and will be forwarded gratis from the Central Office, 300 Mulberry street, New York.

POWER CONSUMED IN INITIAL CRANKING.

Editor THE AUTOMOBILE:

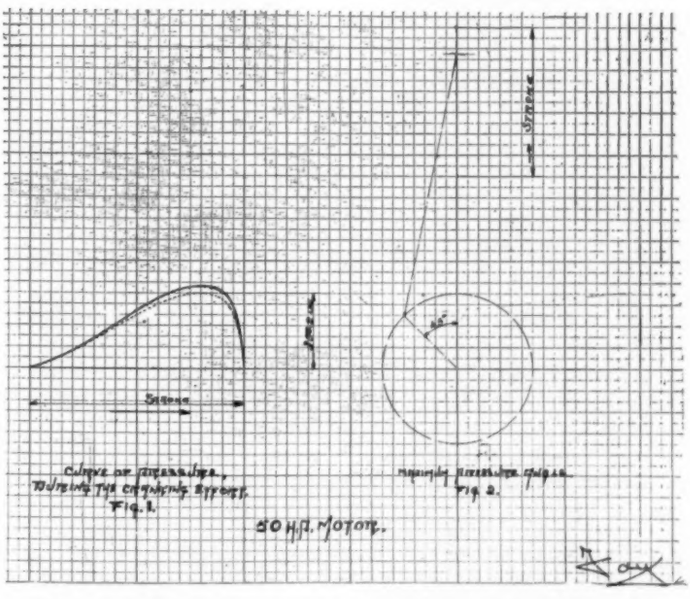
[1,020.]—I thank you very kindly for your reply to my recent question in regard to the amount of power required to produce a revolution of a gasoline engine. It was, no doubt, through my not having made myself clear that you misunderstood what I wanted.

I wished to know the amount of power required to produce the initial revolution of a gasoline engine of 50 horsepower, with a compression of 70 pounds to the square inch, the majority of automobile engines not having over 50 horsepower, nor a compression higher than 60 or 70 pounds. You also gave the amount required at 1,000 r.p.m., whereas I desired this information for the initial revolution to start the engine.

I inclose envelope herewith for reply, also ten cents, for which please send me a copy of the October 31 issue, which I was unable to obtain, my dealer having sold out his supply. H. C. ARNOLD.

South Framingham, Mass.

As it is customary to publish all letters of general interest in this department, the reply is given herewith instead of being forwarded by mail, the delay in answering being accounted for by the Chicago show intervening. It may be



FIGS. 1 and 2.—Illustrating the curve of pressure during the cranking stroke, and the maximum pressure angle with reference to the stroke.

well to point out that that question of the power of the motor is not involved, at least not directly, although it happens to be the case that the torque of a motor is very nearly the same as the initial pull in starting the motor. As your inquiry in its present form involves the mathematics of the subject, we think a curve illustrating it is of considerable interest, and herewith append an illustration of one that has been kindly prepared by Thomas J. Fay, who has also compiled the formula for calculating the pull. The curves, Figs. 1 and 2, were charted to show at what point in the revolution the maximum pull would come, beside indicating the characteristic of the pressure curve during the cranking revolution.

The cranking pull on a 9-inch crank, for a 50-horsepower motor of the usual automobile type, would be maximum as follows:

$$P = \text{Sin. } a \frac{C \times T}{L} \times \% \; C = 375.5$$

approximately for the motor in question. In this formula:

P = the pull in pounds at 9 inches radius.

a = the angle of the crank arm to the connecting rod.

C = cold compression in pounds per square inch.
%C = the percentage if the compression corresponding to the given angle of the connecting rod.

Naturally the length of the connecting rod will affect the result in some measure, in addition to which no calculation will give absolutely exact results.

INFORMATION ON CHANGE-SPEED GEARING?

Editor THE AUTOMOBILE:

[1,021.]—In a course on the subject of gas engines, each is required to write a paper on some subject pertaining to them. Mine chanced to be "Change of Speed Gearing." I find it difficult to get any information on that subject, and could you refer me to any articles in your paper or elsewhere on that subject? JAMES W. WAITE.

Golden, Colo.

Articles on this subject appeared in THE AUTOMOBILE in the following issues: July 12, July 19, July 26, August 2, 1906. It would be necessary to have reference to a file or bound volume of the paper to obtain these numbers and various other articles on the subject would be found by looking through it. A general article also appeared in the issues of May 9 and May 16, 1907, but as few of the back numbers of THE AUTOMOBILE are in print, doubtless you would find some such work as "Self-Propelled Vehicles," by Homans, much better suited to your purpose, the necessary information being concentrated in a few chapters, instead of being scattered through a number of papers.

CAN ANYONE HELP THIS INQUIRER?

Editor THE AUTOMOBILE:

[1,022.]—I have been told that J. C. Haschke, of Chicago, Ill., has a patent compound storage battery, and an official test was made on the 10th of April, 1907, and this touring car and battery was illustrated and described in all the scientific and automobile papers in the world. Have you described this car and battery in one or more of your magazines? If so, please give me the number and I will send money order covering the amount, as I am anxious to get all the reading matter that I can in regard to it.

Millis, Mass. C. E. DANIELS.

We regret to be unable to help you out and must confess our ignorance of Mr. Haschke's battery. If any of our readers are better informed on the subject, or were present at the test in question, we shall be pleased to publish their communications or place them in direct touch with you.

WHY NOT THE 8-CYLINDER "V" TYPE MOTOR?

Editor THE AUTOMOBILE:

[1,023.]—While you are discussing four and six-cylinder motors, what is the reason that the eight-cylinder type has not been used? It could be built more compactly and with no more parts than a six, while its torque would be more even than either, inlet passages could be shorter, and other advantages are apparent. I think the Marmon is the only one built in this country, and they do not seem to be advertising it this year. GEORGE S. CASE.

Cleveland, O.

Probably the most practical reply to your question is to be found in the fact that there is a demand for the six-cylinder motor, but little or none for the eight-cylinder of the type you mention. It embodies all the advantages you set forth, but this does not make people who buy cars want it, and that is the only reason manufacturers are now building six-cylinder cars.

FROM GRAVITY TO PRESSURE FUEL FEED.

Editor THE AUTOMOBILE:

[1,024.]—I am up against a proposition I do not know how to handle. My gasoline tank is now above my carbureter, and I want to hang it below the frame. In doing this the bottom of the tank will be 18 inches below the float level in the carbureter. Now, how am I going to force the gasoline to the carbureter? Will check valve exhaust pressure work if I cut in between the motor and muffler? I have a Powell muffler, and will I get pressure enough to have a sure and dependable feed? CHARLES BOYDEN.

Grand Haven, Mich.

You can install either a pressure-feed system or a small pump. The former is most commonly used on cars having tanks below the carbureter level. The exhaust manifold is tapped, generally just back of the motor, and a check valve inserted. As the pressure required seldom exceeds two pounds to the square inch, there is no difficulty in obtaining all that is needed in this manner.

WHY AN L. T. MAGNETO MUST BE TIMED.

Editor THE AUTOMOBILE:

[1,025.]—Will you kindly inform me if it is necesary to time a low-tension magneto in replacing it on a car in order to have it work properly? I have had the engine of my 15-20-horsepower Darracq taken down, and in doing so had the timing gears deranged. The man I employed to retime them claimed that the magneto had to be timed also, and proceeded to do it, but failed to make it work and claimed that the magneto was demagnetized. I cannot understand the failure, inasmuch that it had given me entire satisfaction up to the time of the engine being taken down. I have always been under the impression that a magneto supplied a continuous current and did not require to be timed. VICTOR F. PELIN.

New York City.

It is quite essential that the low-tension magneto should be timed with the engine in order to give satisfactory service. Your impression that such a generator supplies a continuous current is erroneous. A magneto, properly so-called, generates an alternating current which fluctuates from zero to its maximum, first in one direction and then in the other, this being known as its *cycle*. For incandescent lighting, an alternating current of 65 to 125 cycles per second is employed, the alternations thus being so rapid that the current is practically constant and no flickering is noticeable at the lamp. The winding of a magneto is, however, so simple that unless it be run at a very high rate of speed there is quite an appreciable interval between the recurrence of the cycles. Consequently a mechanical circuit-breaker actuated by the shaft of the magneto is employed. This maintains the armature short-circuited on itself, its opening being timed to coincide with the action of the make-and-break device in the cylinder, and also with the point of maximum value of the current curve, commonly called the peak. As the current curve, or wave, is of equal value at equal distances from the peak, this permits of advancing or retarding the time of ignition, though in practice there is found to be little need for this with low-tension ignition. In addition to synchronizing the action of the magneto with the running of the motor the use of a circuit-breaker, as described, also has another great advantage, in that the sudden opening of the armature circuit at the point of maximum current flow utilizes the self-induction of the winding to increase the value of the current, thus causing a much larger arc, or spark, at the point of rupture in the cylinder. The simple spark coil, with a single winding, is a familiar example of this action. If the magneto gear and the driving gear on your car, or whatever arrangement is employed, does not bear any distinguishing marks to facilitate timing the magneto, it may be done about as follows: Turn the motor over until the piston of the first cylinder is at the upper dead center, or what may be termed a medium-speed firing point. Remove the protecting plate from the armature of the magneto, unless its position can be determined otherwise, and turn the shaft by hand until the armature is in a position about 30 degrees from the horizontal; about one-fourth to one-third of the armature pole piece will then have emerged from the polar gap of the fields. As the point of maximum flux occurs when the armature is at approximately 45 degrees from the horizontal, this should provide ample latitude for advancing or retarding the spark. Mesh the driving gears in this position, marking them carefully for reference. Try starting the motor on the magneto and if the results be not as satisfactory as desired, changing the engagement of the gears one tooth forward or backward will frequently be found to make things right. The complaint that the magnets have weakened is an old standby of the repairman and should always be regarded suspiciously, unless the magneto has been permitted to stand with its armature withdrawn for some length of time. Such a charge can readily be refuted by turning the machine over by hand briskly and noting the spark.

EXTREMELY HAZY AS TO TWO-CYCLE MOTOR.

Editor THE AUTOMOBILE:

[1,026.]—Kindly answer these questions in the next issue.

1. Does a two-cycle engine travel twice as fast as a four-cycle, and if so, does it necessarily consume double the gasoline, batteries, etc., as a four-cycle one?

2. Will a two-cycle engine make 2,500 r.p.m., while a four-cycle but 500 r.p.m., and if so, does not this extra wear and tear offset the advantages of constant torque claimed for the two-cycle?

3. If the answer is yes to the second question, will not a two-cycle car travel twice as fast as a four-cycle?

4. Do you not think that the two-cycle superiority over the four-cycle type is only on paper?

5. Is not the Elmore the furthest advanced two-cycle car?

6. Is there any advantage in making six-cylinder, two-cycle cars over a four-cylinder one?

7. Can anything as to the balance of a motor be shown by the exhibition engines at the shows, which are run by electric motors?

8. Is not the Elmore the only two-cycle car licensed under the Selden patents? FRIEND AND CRITIC.

1. No. A two-cycle engine cannot be made to run as fast under load as one of the four-cycle type, owing to the impossibility of getting a charge into the cylinder and out again at high speeds. This is one of the chief drawbacks of the two-cycle type.

2. The foregoing suffices to answer this question as well.

3. No. Two-cycle cars have never been noted for their unusually high speed.

4. Many of the claims of superiority made for the two-cycle motor are utterly unfounded, but they are not made by those who are aware of the relative merits of the two, and particularly not by makers of well-known two-cycle motors.

5. It is the only two-cycle car of its size that has been on the market for any length of time.

6. The gain would be merely theoretical and would doubtless be more than offset by the disadvantages of extra weight and mechanism.

7. No. The motor is only being run at a fraction of its normal speed under such conditions and is not under load.

8. Yes.

The nature of your queries shows such an utter lack of knowledge of the characteristics of either type of motor that it would be imposisble for us to answer the first three without going to interminable lengths, and would advise you to read up on the subject in order to get a better understanding of it.

CONCERNING THE DESIGN OF A SPRING WHEEL.

Editor THE AUTOMOBILE:

[1,027.]—Kindly answer the following when convenient. In an autocar at rest (dead weight) and an autocar running at maximum speed, over the usual obstructions of country roads, what is the difference allowed by manufacturers for the extra pressure to be sustained by the wheels (the whole four wheels)? To illustrate, suppose a car to be 2,400 pounds in weight—we will not say anything about the extra weight of from one to five persons in this instance, but will consider that the 2,400 pounds at round figures covers everything. This will give each of the four wheels 600 pounds to carry or sustain when at rest—now what do you allow for the extra sudden weight that the four wheels in addition are called upon to sustain at the moment the reaction sets in, i.e., I mean when the full force of the weight falls upon the supporting wheels when running at the maximum rate of speed over obstructions such as offered by country roads? Would suspension or spring adjusted wheels rock, as I am working on, be required to be increased in strength to the extent of one-quarter, one-third, or one-half or more of the dead weight of said car, i.e., car weight (motor) 2,400 pounds; sustaining power of each resting wheel 600 pounds; sustaining power of each wheel in motion say to be one-half of the car's weight = 300 pounds per wheel = 900 pounds per wheel?

In conclusion, beg to say that I would be pleased to have you reply at an early date, if convenient, as I am about to place the order for my helical springs for the new wheels.

Easthampton, Mass. CHARLES J. MALINGS.

A wheel that had no greater factor of safety than one which was merely designed to carry the weight of the car at rest, or 50 per cent. in excess, would be far from safe. In this, as in other forms of construction, the allowance generally made is several times that which calculations show the wheel will be called upon to stand in the course of ordinary service, and the fact that the modern artillery wheel will frequently stand terrific shocks without damage, shows that its factor of safety is high. Just what the latter is, only the manufacturers of the wheels know, though there may be more or less data extant.

Lateral movement or side pressure, or, as you term it, "rocking," is one of the forces that nine spring wheel inventors out of ten totally overlook until they come to try out their devices. Such a wheel should have an even higher factor of safety than an artillery wheel, as it is not a solid construction, so that it should be capable of bearing several times the weight ordinarily imposed upon it, instead of 1-2 or 1-3 more, as you mention. A wheel capable of sustaining only 900 pounds, if placed on a 2,400-pound car and driven at speed, would provide a direct road to the hospital, if not something worse. As already mentioned, we are not aware of the percentage of the factor of safety of the ordinary artillery wheel, but would not be surprised to learn that one of these wheels could sustain 3,000 or 4,000 pounds without crushing, and probably more.

WHAT IS THE CAUSE OF THIS FORMATION?

Editor THE AUTOMOBILE:

[1,028.]—I desire to ask if you can give me any explanation of a condition which arose with my gasoline launch during the summer and which gave me a good deal of trouble.

I ran a 21-foot gasoline launch during the summer. This launch had a galvanized iron tank in the bow. My difficulty was that repeatedly the gasoline would not run out of the tank into the pipe leading from the tank to the engine. This I found to be occasioned by small flakes obstructing the outlet of the tank. These flakes were very thin, light yellow in color, varying in size from that of a pin head to that of a finger nail. They evidently formed in the tank, due to some peculiar action of the gasoline in the tank. These flakes would sink both in gasoline and in water, and seemed to re-form from time to time. When handled they would crumble into an almost impalpable powder. Have you had any similar experiences, and can you explain the formation of this material and how to obviate it?

Thanking you for your reply, either by letter or in "The Automobile," I am, EDWARD G. TUTTLE, M.D.

New York City.

While we have never heard of a similar case, from your description of the flaky precipitate formed we should judge this to be the result of some chemical combination of the gasoline with the inside coating of the tank, unless the gasoline itself were of a very poor grade and would throw down such a precipitate, regardless of the nature of the container in which it was held. Galvanized iron tanks are seldom used on automobiles for holding gasoline, which probably accounts for the lack of similar cases. Doubtless the refiners could tell what the substance was and what is the cause of its formation. If any of our readers have ever had a similar experience we should be pleased to hear from them.

SOME QUERIES CONCERNING VARIOUS MATTERS.

Editor THE AUTOMOBILE:

[1,029.]—I have a few questions I would like to have you answer through "Letters Interesting and Instructive." (1) About what is the voltage of the spark as it takes place in the cylinder? (2) What should be the pressure of tires on a runabout? The tires are 28x3, the weight of the machine, 1,100. (3) Which is the cheapest in the end, and the most satisfactory, the magneto, dynamo, or batteries for ignition on a four-cycle, four-cylinder gasoline engine? (4) What should be put into a planetary transmission, oil, dope, or a mixture of oil and heavy grease. (5) I wish to put an oil tank with sight feed upon the dash and would like to know if it will drop by gravity into the crankcase, or will I have to have a pump to pump it in? The crankcase is enclosed and lubricated by the splash system. LOWELL ELLIS.

Warren, Mass.

1. We believe it is estimated to be in excess of 100,000 volts, but to our knowledge no attempt has ever been made to accurately measure the voltage of secondary spark discharges. The potential required to bridge gaps of certain lengths in the air and in vacuo have been calculated, but the figures are not at hand.

2. Fifty pounds to the square inch.

3. We should say the magneto, but there is considerable op-

opportunity for a difference of opinion on the subject, as you may know.

4. Light machine oil, frequently renewed, will give the most satisfactory service. "Dope," or heavy oil and grease, will create too much friction between the pinions of a small planetary gear.

5. A gravity feed will work satisfactorily, but is not as reliable as a pressure or mechanical feed, in which the oil is forced through the tubes.

MR. RUSHMORE ON MR. LOUGHEED'S ARTICLE.

Editor THE AUTOMOBILE:

[1,030.]—The article on "Automobile Lamps and Their Lenses," by Victor Lougheed, in your December 12 issue, was read by us with a good deal of interest, and in the main is the clearest exposition of the optical principles of automobile lamps which we have seen in the trade publications. Two or three points, however, seem to require comment.

Mr. Lougheed seems to assume in preparing his diagrams that the intensity of the illumination is the same in all directions from an acetylene flame. In fact, this is far from being the case. Any luminous gas flame is more or less opaque to light rays passing through it, on account of the incandescent but solid particles of carbon which furnish the light. As the acetylene flame is particularly rich in these carbon particles, it is practically opaque, consequently the edges of the flame give an illumination substantially proportioned to their projected area, which, compared with the flat surface of the flame, is practically nothing. In other words, it is only the front and back of the flame that count, and the intermediate zone of the imaginary light sphere has little value. A short focus lens mirror, which catches nearly all of the rays from one surface of the flame, projects all the light that can in practice be utilized.

The opacity of the flame likewise defeats the theoretical argument in favor of the type of headlight which employs a parabolic reflector with bullseye lens in front of the flame and hemispherical cup behind the flame. As a matter of fact, even if the reflecting surfaces remained bright, which Mr. Lougheed very correctly points out is not the case, the flame would still stop the rear rays reflected back into it by the cup.

Finally, we will admit having some quarrel with Mr. Lougheed's use of the terms "project" and "efficiency." He shows in Fig. 6 the standard locomotive type of parabolic reflector, extending it, however, somewhat farther forward than is customary, and, after pointing out the deficiencies of any metal reflecting surface exposed to a flame, he states in the next breath that this reflector "projects" 88 per cent. of the light. As a matter of fact, it does nothing of the kind.

If the illumination were equal in all directions, it would intercept 88 per cent. of the rays; but it is one thing to intercept rays and quite another to project them. His use of the term "efficiency" is equally misleading. A steam boiler is rated at one horsepower for each 30 pounds of water evaporated per hour. If a certain boiler evaporated 3,000 pounds per hour and a 10-horsepower steam engine got away with all the steam the boiler could make, would Mr. Lougheed call the engine "efficient" simply because it took all of the steam? We hardly think so.

We ourselves used to make marine electric searchlights on the parabolic reflector-plus-lens-plus-hemispherical cup principle a good many years ago, before the lens mirror was heard of; and when we abandoned their manufacture, because shipmasters said, after a few weeks' service, they would not throw a beam the length of the ship, we were under the impression that they were not very "efficient," no matter how many rays of light were stopped by the reflectors.

RUSHMORE DYNAMO WORKS,
Plainfield, N. J. S. W. Rushmore.

WHY T. B. JEFFERY PROTESTED C. M. C. POINTS.

Editor THE AUTOMOBILE:

[1,031.]—In view of our having protested the decision of the technical committee making the awards in the recent 600-mile sealed bonnet reliability run of the Chicago Motor Club, we feel it only fair to state our reasons for such protest.

This run was undoubtedly the most severe official test of motor vehicles ever made, and, in the words of one of the judges, every effort was made to avoid perfect scores. In fact, these efforts were carried far beyond essential features, and though several cars made every control on time and finished in apparently perfect condition, with all seals intact, they were deprived of a final perfect score merely on account of inessentials or accessories.

In our own case the heaviest penalty, four points, was inflicted on account of a taillight, palpably broken by impact, and in all probability by another car while the contesting cars were being moved in or out of the official garage, as neither the observer nor the passenger in the rumble seat was aware of its being done, as they undoubtedly would have been had the damage been done while the car was in service.

Under the circumstances, we felt it unfair to attach a stigma to our car on account of damage to an unimportant accessory from outside forces over which we had no control, and in which no weakness on the part of the car or accessory was even contributory.

We also protested the decision covering our primary or pedal brake.

In our judgment, based on several years' experience in automobile manufacture, it is inadvisable to so adjust this brake that by sudden or injudicious application the wheels may be locked and great and unnecessary damage be done the tires. This brake is, however, in its present condition and adjustment sufficiently effective to stop the car within fifty feet with the car traveling at twenty miles per hour, at the instant of application, as was proven by several tests on various pavements. In fact, the judges admitted that the question was merely one of adjustment, and based the penalty of two points on the fact that but one minute or less would be required to adjust the brake to meet the requirements.

Should instant stop be required in case of emergency, so great that effect on tires is of no consideration, a second brake is provided that will instantly lock the wheels at any reasonable speed. We felt that as no notice to the contrary had been given, the matter of brake adjustment was within our discretion and protested the penalty, but the referee held to the contrary and sustained the decision of the judges.

We deeply regret the conditions that impelled us to enter protest against the judgment of the committee, and offer this statement only in order to acquaint the public with our position.

THOMAS B. JEFFERY & COMPANY,
Kenosha, Wis. Thos. B. Jeffery.

MORE OF THOSE ACETYLENE EXPLOSIONS.

Editor THE AUTOMOBILE:

[1,032.]—While looking through "Letters Interesting and Instructive," of the November 14 issue of your valuable journal, I saw some accounts of persons having had explosions take place while bending or handling tubing for generator use. Would say that I have had the same kind of explosions in two distinct cases, one of them taking place directly under a leaking gasoline cock where the piping happened to be at that moment. The lamps on this car had not been in use for some three days, when we received orders to place the generator on the opposite side of the car. While bending the piping for same, slowly, a terrific explosion took place, and a red and bluish flame issued from the end of the brass pipe, the heat generated being so intense that my hands were severely burned. While bending another pipe on same car the very same kind of a noise was heard, this time without the bluish flame. This was a new experience for me, and am glad to see it so ably explained.

HARRY W. SPENCER.
Toronto, Ont.

IN DEFENSE OF PAINTED AUTO HEADLIGHTS.

Editor THE AUTOMOBILE:

[1,033.]—I saw in "The Automobile" of October 17 a letter by William Gray, criticising people who do not use brass lamps. I think the painted brass and nickel lamps on a light painted car look best. I have had both. I find in my touring that not near as many horses are frightened at my car as it is now painted and has nickel lamps. I tour all over the country, and find it hard to get the brass cleaned, as it should be, by the men in the garages. It takes nearly an hour to clean the brass on a car as it should be done. I find now wherever I stop to stay over night the people come around my car and admire it very much, as it is odd. I think the time is not very far off when the brass will be removed by law, as the bright brass on an automobile coming suddenly on fine and high-spirited horses frightens them very much. This I am sure of, as I have tried both carefully. I am also a horseman.

Newburgh, N. Y. E. D. W. ROSE.

STEARNS DID NOT HOLD RIVERSIDE RECORD.

Editor THE AUTOMOBILE:

[1,034.]—In your issue of December 12, page 877, under the heading "Riverside Annual Hill Climb a Success," I note in the first paragraph the statement: "The former record of 5:41 2-5, held by a six-cylinder Stearns, was lowered a fraction less than twenty seconds by a Stoddard-Dayton." This is a decided error, as none of our six-cylinder cars have ever been seen west of the Rocky Mountains to our positive knowledge; hence, it is impossible for any of our six-cylinder cars to have raced either at Riverside or anywhere else in California. Your Los Angeles correspondent was in error, and we trust that you will do us the justice of correcting this statement.

F. B. STEARNS COMPANY,
Henry H. Hower,
Cleveland, Ohio. Assistant Advertising Manager.

"IT COSTS MORE TO PRODUCE A SIX THAN A FOUR"

By F. B. STEARNS.

SOME time ago, knowing that there was a great deal of interest among automobilists in general concerning the relative merits of four and six-cylinder cars, I expressed my opinions on this subject in a general way, giving the views of our company on this proposition as a whole. Inasmuch as we are manufacturers of both four and six-cylinder machines we have nothing to gain or lose by the final decision of the public. We feel, however, that we are in a position to take an unprejudiced view of the subject, something which no maker of either fours or sixes exclusively can hope to do.

I was very much surprised to note the interest taken in my remarks by the automobile public in general and was extremely interested in the views expressed by other manufacturers. I was particularly struck by the attitude taken by two of the latter, both of whom presented the other view of the subject. One of these, who is a maker of both four and six-cylinder cars and is the pioneer builder of sixes in this country, set forth in a very interesting manner the arguments in favor of the six-cylinder. His views on the subject as a whole are manifestly fair and unprejudiced, and on this account we are more gratified at the compliment which he chose to pay our own six-cylinder in his remarks.

We can hardly say as much of the other maker, who is obviously heart and soul in favor of the six-cylinder proposition. His position in this matter is unique, as we understand that he is now making six-cylinders exclusively, something which no other manufacturer in the world has cared to do.

His article in reply to my remarks assumed apparently a direct attack by me on his product, than which nothing was further from my thoughts. Instead of refuting our general arguments in favor of the four by like arguments in favor of the six, he chose to dissect every statement and twist my meaning to suit his own ends. For example, in my former remarks I made the statement that a six was more difficult to time and had 50 per cent. more ignition apparatus than a four. His reply was as follows: "Fifty per cent. more ignition apparatus might be taken to mean that if four cylinders require one magneto six would require one and a half magnetos, and we assure an innocent and unsuspecting public that this fear has no foundation in fact."

We doubt if even a suspecting public would have so construed our meaning! That the ignition mechanism on a six is more elaborate than on a four is self-evident. That an ignition system that "would do" on a four is entirely inadequate for a six is further evidenced by the high-tension magneto system, finally supplied by the above maker of sixes in addition to the battery and coils.

The additional fractional part of a magneto is not required on a six, as our six-cylinder "spokesman" rightly informs us—a whole and complete system is required, however. What percentage of an ignition system is represented by a magneto can best be determined by "unsuspecting" purchasers of former models of this maker, whose cars lacked this part of the system. However, the need of a magneto for the six is by no means an argument against the six, for a well-designed four-cylinder motor is not considered complete without magneto ignition, although the magneto itself is somewhat simpler.

That the correct timing of a six-cylinder motor is more difficult than on a four is beyond question. If not, why the inevitable question of the buyer—"How does she fire?" Why the resulting confusion of the salesman?

The replies made to my arguments by other makers confined themselves mostly to the standard argument for the six—namely, flexibility and power. Unquestionably, flexibility and power compatible with simplicity and reliability is the ultimate aim of every automobile designer. Flexibility and power are admitted advantages of the six-cylinder motor, but why to these should be sacrificed simplicity and reliability? Undoubtedly there will be one, two, three, six, eight and even twelve-cylinder motors made for motor cars, all with various arguments in their favor, but the four is and always will be the standard of the world for sane touring car practice. If flexibility is of any advantage at all, it is at its best in town use and through heavy traffic. Why, then, are all the town cars and taximeter cabs four-cylinders? Isn't it probable that the majority of these cars have attained the required flexibility by other means than the addition of two more cylinders?

Everything else being equal, carburetion is the one thing in a motor car which makes flexibility possible, and which makes the motor run equally well at high and low speeds.

Without a change in adjustment on our carbureter we have obtained a variation in speed of from 150 to 2,000 revolutions per minute with a four-cylinder motor, and with two more cylinders we have not been able to obtain the 50 per cent. greater flexibility. In fact, the variation in speed of the two motors is practically the same, and the proportion of the amount of power developed at the lowest speeds is not noticeably different. This difference in the action of the engine rapidly disappears as the motor speeds up, and we believe that with the engine running as low as 250 revolutions no difference can be noticed by the ordinary observer. With the usual reduction in gearing in automobiles as low a speed of the engine as this is never required, and we fail to see how any difference in the handling of the car could be noticed.

We believe that for a six-cylinder motor to be better than a four for automobile purposes its advantages should be apparent to the driver of the car at any and all times and at any and all speeds. Admittedly the six as a motor has its advantages. It also has its disadvantages, and we believe that these are far more apparent to the owner. For instance, a six will start harder than a four because of the additional friction. If this is not the case, why has one maker of sixes equipped his car with a self-starting device, which in itself is a complicated piece of mechanism? But this is of minor importance. Much more than this will the owner notice the strain on his pocketbook rather than on his arm. This strain comes from an increased first cost and an increased cost of maintenance, which always accompanies additional complications in any kind of machinery.

Invariably the price of six-cylinder machines is much greater than that of fours of equal power. If it does not cost more to produce these six-cylinder cars, why the added cost to the purchaser? It does cost more to produce a six than a four. It costs more because there are more parts, and if there are more parts there is more complication, and if there is more complication there is more trouble, and if there is more trouble there are more repair bills. We note from extensive advertising that an exclusive six-cylinder maker is probably anticipating this trouble, as he is offering large rewards "in gold" for good chauffeurs—a plan which, he says, "will benefit the owner."

We do not advocate saving money in the first cost of a car; we do advocate paying for quality rather than quantity. We know it is possible to obtain in a four-cylinder by proper design and workmanship the flexibility and power of a good six-cylinder.

We advise paying for right design and expert workmanship in the first place, which in the end will be more than paid for by a greater reduced cost of upkeep. It is our belief that this point of view is the correct one for the intelligent purchaser of any motor car. The idea that a new model, and in some cases a new type should be produced yearly, is radically wrong.

A maker of sixes to-day formerly made one cylinder, then twos, then fours and now sixes. The excuse given at each step was that the two corrected the faults of the one, and that the four overcame the difficulties of the two, and now the six is the best ever and corrects all the faults of his four. Where is this going to stop? So on *ad infinitum?*

This line of argument is all wrong. The field for one and two-cylinder motors is in cars of small power, and there are many such successful machines in use to-day. The field for the six is in cars of extreme power, and there are some of these in successful operation. But the four-cylinder remains as the standard of the world for an ideal powered car and a still further refinement of this type of car is the ultimate aim. There will be one and two-cylinders made, and sixes and even eights, but there is and will be but one standard—the four.

Let me emphasize what I said in my previous remarks—that a good four-cylinder car is good enough for anyone, and that there is no need to desert the four for the six. With a high-class four under the hood it is impossible to detect it from a six at anything above an abnormally low speed. And for this one small advantage the purchaser must pay a higher price, must care for 50 per cent. more cylinders, have 50 per cent. more reciprocating parts, 50 per cent. more valves to grind, 50 per cent. more cylinders to clean out, 50 per cent. more ignition troubles, and if his motor ever goes wrong he has repair bills amounting to 50 per cent. more than if he had a four.

In continuing to build both fours and sixes, we have followed the example of such concerns as the Panhard, Renault, Mercedes, C. G. V., Fiat and many others of note.

Despite all statements and arguments to the contrary, the four-cylinder is and always will be the standard of the world, a fact which no amount of talk can overcome, for the simple reason that it is a fact. This is far from being an individual opinion, or the opinion of any one company, but is held by all the leading designers of the world, notably those mentioned above, in addition to the cream of the American manufacturers.

"MAKER WHO HAS BUILT BOTH TYPES ABLE TO ARGUE"

By LOUIS GEYLER.

IN view of the fact that there are so many opinions on the subject of "fours" vs. "sixes," it is very evident that those manufacturers who are building four-cylinder cars and have no sixes to sell talk very strongly in favor of the fours, because they have to sell them. And those who are building sixes are naturally talking the other way. It is simply a question of whom the shoe fits. They all agree on one point, however, and that is that the *six has more flexibility than the four.*

It certainly stands to reason that the manufacturer who has built both types of motors is better able to argue the point than one who is only making a four. Although the Stevens-Duryea people do not believe in a large four-cylinder car—that is, a four-cylinder of 40 horsepower or over—they have built a new four-cylinder with a 4 3-4 bore by 4 1-2 stroke, which, according to the A. L. A. M. rating, gives them the same horsepower as their light six—viz., 36 1-10. This gives them two cars of the same horsepower, but they do not for one minute consider that their new four will do the same work as their light six. They certainly are in better position than any other manufacturer in the country to judge of this matter, on account of having two cars of practically the same horsepower in fours and sixes, and are in position to state which one they consider the superior. They are very emphatic in their belief that the six-cylinder car represents the acme of motor car enjoyment, and any person paying more than $2,750 for a car should get a six. In other words, the stand they take is that the four-cylinder car they are building is as large a four as anyone should buy, which they consider the limit of horsepower, size and speed that should be embodied in a four. They are building this car to supply the demand for a four-cylinder of moderate size and power, the same as some manufacturers are building two-cylinder cars to supply the demand for machinery of that particular class.

As everybody knows, the majority of foreign manufacturers are building six-cylinder cars in connection with their fours, and in the last five years the number of makers putting out six-cylinder cars has increased from one or two to over seventy. And in the last four American shows (including licensed and unlicensed) the steady increase of sixes is shown by the following table:

	1905	1906	Dec. and Jan. 1906-7	Oct. and Nov. 1907
Six-cylinders	2	5	18	46
Four-cylinders	127	256	333	258

Showing 46 six-cylinder models built by 28 different American manufacturers to-day, this does not tend to prove, as some people seem to think, that the six is a passing craze.

Just one more point before closing, which I believe will show the tendency stronger than all the technical arguments that can be brought to bear on the subject. This is, the Stevens-Duryea Company have sold and delivered up to the present writing 730 six-cylinder cars, both light sixes and big sixes, and they are being used from Portland, Me., to Portland, Ore., and from Minneapolis, Minn., to Mexico City, Mex., and they are all giving satisfaction. So far as I have been able to ascertain there is not one single man driving a Stevens-Duryea six who would go back to a four, except in case he wants an extra car as a runabout. The Stevens-Duryea Company is the only American company that has this number of sixes in use.

PLEA FOR THE SIX-CYLINDER MOTOR ON "V" PRINCIPLE

Editor THE AUTOMOBILE:

There is nothing that is of more interest to the trade, and especially to the mechanical end of it, than the discussions of proper design that are now running in your columns. We all have at least one idea in common, that the future automobile must be reliable, powerful, and comfortable.

The chief discussion at present is concerning the power plant, and this is to be expected, for the fact that power plants differ more than any other detail signifies that the different builders are widely at variance as to what constitutes the best, from their point of view. One maker tells us that the "best" motor is the fastest one. The next one says his is better because more powerful; then comes the "smoothness" man, and the "durable," etc., etc. But I believe the majority purchaser will seek for reliability first of all, and this usually means few parts, and those few properly designed and well made from the stock best fitted for the purpose, which is not always the most expensive stock, either.

After being convinced as to reliability, my customer usually calls for power. He well says that he wants to ride faster up hill than down, because in case of accident there is much less trouble in calling a halt, and, while he may not care to make fast time very often, yet there are times when it is of the utmost importance that he arrive promptly. The matter of comfort is usually lost sight of, or at least largely, most people believing that any good car, as at present turned out, is not very hard on the passenger, so I am placing the matter of comfort at the tail end of the list, the other elements of reliability and power being so much more important.

So far as reliability goes, we are agreed that any motor may be reliably made, within certain limits, said limits being measured by weight of material, its distribution, and its speed and strain under service conditions. This matter of weight and distribution of material leads us to the discussion of the number of cylinders, and that means as between the "4" and the "6," for it is generally

conceded that while the single cylinder will do a certain amount of work well and will always be with us, and while the double opposed is extremely well adapted to many conditions and has an enormous future, yet the real, full-grown automobile will have either 4 or 6 cylinders, as more does not give proportionate advantage, and less does not give real results, either in power or use.

To my mind, the strong objection to the "6" as at present put on the market is its crank. No mechanic worthy of the name would think of transmitting power around so many corners as are found between the first cylinder and the transmission unless he was compelled to do so, and by this I mean that it is not good mechanics to do this, but it has to be done on the sixes as at present put out.

One of your able contributors, arguing against the six, said recently that he was unable to get 50 per cent. more power from six cylinders of the same size than he could get from the four, but I believe that if his test were made with the first four cylinders on a six-throw crank, he would find that he would not develop two-thirds as much power as with the full six, which is only another way of saying that, theoretically, the six will develop more power in proportion than the four, as the six certainly has 50 per cent. more displacement, and it certainly has not 50 per cent. more friction surfaces. So I believe the failure of the six to develop power in proportion is due more than any thing else to the utter impossibility of making a crankshaft that is stiff enough to carry the load developed in the front cylinders to the rear end, without large losses due to the bending and twisting strains on the shaft from one crank to the next, and so on to the rear end.

That a crank can be made that will do something in this place is indisputable, but that it can be made stiff enough to carry all the power of the front pistons is very doubtful, the peculiar shape of so long a crank tending to make it serve as a spring would if interposed between a hammer and nail. The further argument from the same source that a six calls for so long space that it increases the wheelbase unduly, I do not agree with. No large car will give the best results under all conditions, either to its occupants or to itself, without a ten-foot wheelbase, and there is room enough here for the usual six, though it could be used for other purposes if not so occupied.

But the six is the smallest even number of cylinders that can be used in the 4-cycle plan, in which the impulses overlap, and hence it will surely run smoother, strain the transmission and tires less, and will always be in favor for these reasons. The "4" must always have two points in each revolution where nothing keeps it going but inertia, and then when the next power impulse arrives and takes hold suddenly, a strain is developed that tends to shorten the life of the material, and incidentally that of the occupants of the car. So that it seems to me that some form of the six is to be desired, if that form can be made more compact, and equally as efficient as the four is now made.

My suggestion in this connection is that we take a lesson from the very successful (if rather complicated) eights, that have shown more power for their weight than any thing else ever built, and set our six in two rows of three on a side, at 120 degrees, thus using a three-throw crank, dispensing with three bearings and their consequent friction, bringing the first three cylinders as near the work as the other three are, saving space, bringing our load lower and farther back if we wish to, and adding nothing at all in the way of complications, but rather decreasing them.

If this form is practical for an eight, it can certainly be adapted to the requirements of the six, and all users, as well as the makers, will be the gainers over any form now on the market. All the advantages of reliability possessed by the four should attend this design, and certainly in theory it should develop power in proportion to its displacement, while its easy qualities should be fully as good as the present six, if not better. I believe we shall hear more of this construction later.

W. L. ARCHER.

Rutland, Vt.

"ALL IMPORTANT RACING EVENTS WON BY FOUR-CYLINDERS"

By J. D. MAXWELL.

THE controversy now on between the manufacturers of four-cylinder and six-cylinder cars is not new, nor is it one in which the Maxwell-Briscoe Motor Company has not had its say. As a matter of fact, our own experiments along these lines have antedated those conducted by many other manufacturers, and we have even overstepped the limits which the manufacturers of six-cylinder cars seem to have set themselves, for we have built and have now running, experimentally, eight-cylinder cars, and even one of twelve cylinders.

If we have returned to the making of two and four-cylinder cars, you will agree there must be good reasons for such course. As an example, let us remember that all important racing events have been won by four-cylinder cars. In the last Grand Prix there were two eight-cylinder English cars, one six-cylinder car made in Italy, and an eight-cylinder French car, but none of them gained honors in this contest, which was won by a four-cylinder car. All this, while not disputing the value of the six-cylinder idea, surely is pretty strong testimony in favor of the efficiency of the four-cylinder type of the motor-driven vehicle. One phase of the dispute which seems to have been overlooked so far is that the final word will not be spoken by the automobile designer, but by the motorist, who, from all evidence, does not consider the six-cylinder car as past all experimentation. Both the four-cylinder and the six-cylinder have their relative advantages. It must be borne in mind that the automobile buyer of to-day is a rather remarkably well informed chap, who knows a good deal about motor cars, although he may never have owned one himself. The new type of purchaser, who only a few years ago was satisfied if his motor would take him over the roads in fairly good fashion, has become more fastidious—he knows what he wants and insists upon getting it. Nor can there be any question that he should get it, for it is he who pays the freight. And if you ask me why the 1908 Maxwell line includes no six-cylinder model, let me show you our orders for two and four-cylinder Maxwells and you have the answer.

HOW TO ADVANCE THE SIX-CYLINDER INTERESTS

By CHARLES B. SHANKS.

THERE are two ways of advancing six-cylinder interest. One is a straightforward presentation of six-cylinder advantages by catalog, in the newspapers, and by salesmen. The second and the less expensive way is that of foolish opposition. Indeed we have found that the very absurdities urged against six-cylinders by advocates of the four have been extremely effective in convincing intelligent motorists that the six, lacking real, tangible defects for its opponents to pounce upon (as illustrated by their use of obviously illogical points), must be a car well worth investigating. We hope our loving friends in the four camp will keep up their good work. They are doing quite as much to create a "six" stampede as are the "six" makers themselves.

A four-cylinder enthusiast says that six-cylinders are unnecessary. "Hark back to nature," he says, "and observe that the horse who has only four legs combines great speed and strength." On that basis the two-cylinder is still better, particularly for speed—did you ever see an ostrich run? What!

Next year's Tourist Trophy race on the Isle of Man will be run under four-cylinder, four-inch bore rules instead of the time-honored fuel limit regulations.

According to official statistics there were 1,672 cars registered in France in 1899. In 1903 the number had reached 12,984, and last year's registrations were 35,923.

ALL-WINTER UTILITY OF THE AUTOMOBILE AS EXEMPLIFIED ON NORTHERN NEW JERSEY'S FINE HIGHWAYS.

SOME AUTOMOBILE OBSERVATIONS THAT MAY BE OF HELP

By A. D. HARD, M.D., Marshall, Minn.

Bolts and nuts, screws and pins,
Buy an auto and trouble begins.

WHEN the automobile fails to do its duty, the expert looks and thinks; the novice gets out all the wrenches and goes to work in an energetic manner.

Some operators use the throttle to control speed, and some use spark changer. The wise one uses both, with judgment.

A good anti-freeze solution for use in your acetylene generator in winter consists of one and one-half pounds of calcium chloride in one quart of soft water.

Too many monkey-wrench mechanics are serving as trained nurses in automobile hospitals.

If you can set your starting crank so that the first explosion will take place while you are pulling upward, there will be no serious results, even if there is a back-kick.

Equal parts of denatured alcohol and soft water make the very best anti-freeze mixture to use in a radiator. It will also answer to generate acetylene gas in your generator, however.

A small semicircular copper cup holding about one ounce, communicating with the inlet pipe about two inches from the cylinder by means of the 1-8-inch copper tubing used for gas lamps, makes the best priming arrangement for winter.

If you can put a 4-inch tire on a 3 1-2-inch rim you will save about 50 per cent. of your tire troubles.

CLUBS OUTLINING NEXT SEASON'S WORK

A. C. OF CINCINNATI GOOD ROADS CAMPAIGN.

CINCINNATI, Dec. 16.—The annual banquet of the Automobile Club of Cincinnati was held December 10 at the Business Men's Club, with State Highway Commissioner Sam Houston as the guest of honor. In his after-dinner talk Mr. Houston gave the members a history of road bulding in Chicago and made a stirring appeal for support in his efforts to get legislation by which the State will help build good public highways by paying one-half the expense thereof. He told of the status of the movements in other States, particularly commenting on the fact that Pennsylvania had appropriated a fund of $4,000,000 to build State roadways.

Commissioner Houston said that in the past the principal opposition in the legislature to State aid in highway construction had come from two sources. First from members from the larger cities, who could not see why their constituents should bear the expense of road construction in the poorer counties of the State. The other source of opposition came from the members from the rural districts, who he said opposed the measure because they said that if they build good roads the city people would come out into the country with their automobiles and scare their horses off the road. At present Mr. Houston said the legislators from the city and those from the rural districts were beginning to realize more and more the advantage to both from good highways, and the prospects are beginning to be very bright that the two elements will give their united support to the movement. The appeal of Commissioner Houston for support brought the members of the club to their feet in a unanimous pledge to aid him in every way they can and on a larger basis than has ever before been attempted.

PROGRESS OF THE ALBANY (N. Y.) AUTO CLUB.

ALBANY, N. Y., Dec. 16.—The membership of the Albany Automobile Club has increased during the past year from 70 to 168, and the officers intend to secure every automobile owner within a radius of twenty-five miles of Albany on its roll. During the past year the active work of the club has included attention to the various speed traps outside the city limits, many members and visitors having been saved from falling into the clutches of grafting constables.

Through the efforts of the counsel of the club, a precedent has been established by the courts that the maximum fine which can be imposed for a violation of the speed laws is $50, and in case of arrest, if cash bail is given and a trial is desired, the amount of such bail cannot exceed the amount of the maximum fine, viz., $50.

The club has on hand signboards to cover the route from Rensselaer to Pittsfield (a few of which have been erected), but, owing to proposed changes in the State road now in course of construction over a large part of this route, it has been deemed advisable by the committee having this in charge to wait until the routes are definitely determined before erecting the balance.

NORTH JERSEY CLUB AFTER BAD CROSSINGS.

PATERSON, N. J., Dec. 16.—The North Jersey Automobile Club is making considerable progress in its efforts to have abolished or properly protected the dangerous railroad crossings in the vicinity of this city, as well as in other parts of the State when learned of by members of the club. A report will be filed shortly with the chairman of the New Jersey Railroad Commissioners and results are expected in the near future. There are some especially dangerous crossings near Paterson, and the club is using its greatest strength to have them abolished.

LONG ISLANDERS READY FOR 1908 SEASON.

BROOKLYN, N. Y., Dec. 18.—With the election of officers on December 4, and the annual dinner two evenings later, the Long Island Automobile Club is now fairly well started on the season of 1908, which promises in every way to be a memorable one in the history of the organization. Charles Jerome Edwards, president; Dr. C. B. Parker, vice-president; Russell A. Field, secretary, and Louis T. Weiss, treasurer, bring to their new positions great hopes and enthusiasm for the future, and all possess the hearty endorsement and support of those who have figured in the early and later successes of the club. Activity and a business-like administration will be the watchwords.

No definite announcement of the plans for the ensuing year has as yet been made. It is certain, however, that there will be no let-up in the fight for better road conditions and rational legislation. The bill for the extension of Eastern Parkway through Cypress Hills Cemetery to Forest Park, which would provide some means of decent communication between Brooklyn and other parts of Long Island, will be pushed as never before. This most important measure all but passed both branches of the State legislature this year.

C. J. EDWARDS, President. DR. C. B. PARKER, Vice-President. LOUIS T. WEISS, Treasurer. R. A. FIELD, Secretary.

One of the features of the annual dinner was the presentation of the trophies offered for competition in various events this year. A brief summary of these trophies follows:

Trophy offered by James Edward Bristol for the member making the greatest mileage during the regular touring season: Won by Charles Jerome Edwards. Distance 10,202 miles. Cadillac car.

Trophy offered by Willard P. Reid for the member touring in the greatest number of States: Won by Samuel H. Burns. Seventeen States and the Dominion of Canada. Packard car.

Trophy offered by Wm. Payson Richardson for the L. I. A. C. man recruiting the greatest number of new members for the year: Won by Louis T. Weiss. Thirteen members.

Trophy offered by Wm. Payson Richardson for member attending the greatest number of regularly organized club runs: Won by Leffert Lefferts.

Despite repeated efforts, the contest committee found it impossible to decide the ties resulting from the endurance run held over Long Island roads, and the trophies thus offered will remain in the custody of the club after the names of the cars in the ties are engraved upon them.

SPRING ENDURANCE RUNS OF PENNSY CLUBS.

YORK, PA., Dec. 16.—Spurred on by the success of other endurance runs held recently in the Keystone State, local autoists are planning for a two-day run next spring, which will take in Lancaster, Philadelphia, Reading and Harrisburg. A southern route was suggested, but the trip through the State seems the

most popular one. According to the plans, the first day's run will take in Wrightsville, Columbia, Lancaster, Coatesville and Philadelphia. The night control will be at the Quaker City, thus making the mileage about 100 miles. Two routes have been suggested for the second or final day's run, but the one most generally spoken of takes in Reading, Harrisburg, Middletown and Columbia. It has also been suggested that the second day's run be via Reading and Lancaster to this city. Between 125 and 150 miles will be covered the second day. No date has been set, but the run will probably be held the latter part of May. This will enable the York autoists to participate in the annual run of the Motor Club of Harrisburg, which is to be held earlier in the spring.

BALTIMORE'S CLUB TO TRY SPEEDY MEMBER.

BALTIMORE, MD., Dec. 16.—The board of governors of the Automobile Club of Maryland will sit as a court of investigation when one of the members, Frank Brown, Jr., son of ex-Governor Frank Brown, of Maryland, and the present Democratic leader of Baltimore city, will be tried on charges of reckless speeding of his automobile, which resulted in the death of a pedestrian on one of the principal streets of the city, Thanksgiving morning. Brown has already been fined $25 and costs by a police magistrate on the charge of exceeding the speed limit and was censured by the grand jury, which, in a special report, condemned Brown's action as brutal and cowardly, but claimed that no presentment could be found against him on the evidence produced, which was insufficient to hold him on.

Since last March the club has been committed to a policy of co-operation with the authorities in the punishment of violators of the speed ordinance. If Brown is found guilty of recklessness he will be liable to a suspension of not less than thirty days or for such longer term as the board in its discretion shall determine, according to the nature of the evidence.

Other matters under consideration by the club are the prevention of "joy" riding by chauffeurs, securing a new country and city home, and efforts, in co-operation with the American Automobile Association, to secure a Federal system of registration and identification. The club has received numerous complaints of the loose methods of garages in allowing chauffeurs to take out and return cars any time of the day or night without making note of the same, as well as inadequate provision for verifying the amounts of gasoline used each month. The Philadelphia method of keeping a record of the departure and return of machines, whether taken out by the owner or chauffeur, and the forwarding of memos of the supply of gasoline to owners daily are favored and will likely be adopted.

BAY STATERS HAVE ANNUAL BANQUET.

BOSTON, Dec. 16.—About one hundred members of the Bay State Automobile Association attended the annual banquet of the organization, held Tuesday evening of last week at the Hotel Somerset. President L. R. Speare was unable to be present, and in his place J. C. Kerrison, of the board of directors, presided. The speechmaking was informal, among those called upon being James T. Sullivan, of Boston; George W. McNear, of the Bay State house committee; President John P. Coughlin, of the Worcester Automobile Club; ex-President S. L. Haynes, and Harry Fisk, of the Automobile Club of Springfield; William Noon, and others. The Bay State association is in excellent condition and is preparing for an active season during 1908. The association will look carefully after the interests of autoists at the State House this winter and next spring will enter into outdoor sports with its usual enthusiasm.

WASHINGTON CLUB'S CONTEST HELPED SALES.

WASHINGTON, D. C., Dec. 16.—The spacious clubhouse of the Automobile Club of Washington was thronged with automobilists on the evening of December 10, the occasion being a smoker given in honor of the drivers and observers in the sealed bonnet contest held that day. President Caverly and the house committee arranged a very attractive program, and in addition all the drivers who finished with clean scores were called upon to say something about their experiences on the 118-mile journey over Maryland roads. The contest served a very good purpose in awakening renewed interest in automobiles and members of the trade are making sales every day as a direct result of it.

AUTOMOBILE CLUB OF AMERICA LADIES' DAY.

NEW YORK, Dec. 17.—At the A. C. A. clubhouse, on West Fifty-fourth street, this afternoon was designated as "Ladies' Day," the fair sex having the privileges of the clubhouse and being served with light refreshments. A substantial attendance was the result.

In the evening the entertainment committee provided an illustrated lecture by O. P. Austin, Chief of the Bureau of Statistics, Department of Commerce and Labor, the subject, "Curious Transportation Methods in Queer Corners of the Earth," being most interestingly presented by the speaker.

The usual dinner for members preceded the lecture. Orrel A. Parker, chairman of the entertainment committee, is receiving much commendation for his energetic efforts.

AUTO CLUB OF KANSAS CITY PROSPEROUS.

KANSAS CITY, MO., Dec. 14.—The Automobile Club of Kansas City now has a membership of 174 and a balance in its treasury of $1,980.53. During the past year it has conducted many successful events, including a race meet, an orphans' day, as well as giving pleasure rides to the inmates of other charitable institutions, and various club runs. The annual banquet of the club in January will be a good roads affair, and President William H. Hotchkiss, of the American Automobile Association, is being prevailed upon to be one of the principal speakers. The club is a member of the Missouri State body of the A. A. A.

A TEXAS AUTO CLUB WHICH IS DOING THINGS.

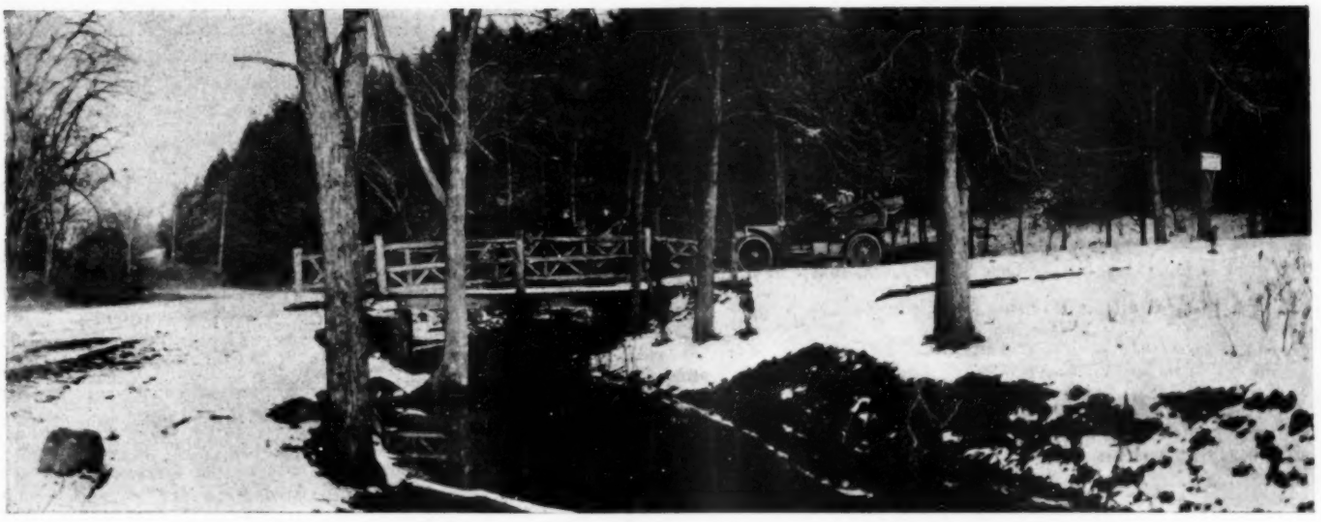
DALLAS, TEX., Dec. 14.—The Dallas Automobile Club, at its recent meeting, elected thirteen new members, giving it a total of 77 out of 150 registered owners in the city. The meeting decided to bring influence to bear upon the congressmen of the district in favor of the federal registration law being put forward by the Legislative Board of the American Automobile Association. The club will appoint members to look after the streets and roads of the city, and efforts will also be made to assist the local officials in inforcing the sane use of automobiles in Dallas.

JERSEY'S BIG CLUB TO DISCUSS PRESENT LAW.

NEWARK, N. J., Dec. 16.—There will be a special meeting of the New Jersey Automobile and Motor Club on Thursday evening for the purpose of discussing such amendments to the present automobile law as may be deemed necessary. The legislative committee of the club has been looking into the matter very carefully and is only waiting the sanction of the members to endeavor to complete its work. The club, being a member of the Associated Automobile Clubs of New Jersey, will endeavor to secure the co-operation of the State body, the officers of which have not been particularly energetic of late.

PHOENIX, ARIZ., FORMING AUTOMOBILE CLUB.

PHOENIX, ARIZ., Dec. 12.—The automobile owners of Phoenix, Ariz., are going to have a club. At the recent meeting, Thomas Armstrong, Jr., was selected as temporary chairman and Arthur Ainsworth as secretary, and G. P. Bullard, R. B. Burmister, and Judge Ainsworth as a committee to draft a constitution and by-laws. All automobile owners in Phoenix will be invited to be present at the next session.



EARLY WINTER AUTOMOBILING HAS A CHARM THAT IS EQUALED BY NO OTHER OPEN AIR PASTIME.

TO TEST DOUBLE REGISTRATION IN INDIANA.

INDIANAPOLIS, IND., Dec. 16.—Through the efforts of automobile dealers, manufacturers, and concerns employing automobiles in their business, a test case has finally been started to determine the validity of the city automobile license ordinance. At a meeting held at the garage of the Fisher Automobile Co., practically every automobile concern in the city, as well as a number of owners, were represented. It was decided to take the suggestion of city officials and test the ordinance. When a number of cases were called in police court that of Charles T. Austin was selected as the one upon which to base the test. He was fined $1 and costs, and bond was immediately given for an appeal to the circuit court. If Austin is held guilty by the Circuit Court, the case will be carried to the Indiana Supreme or Appellate Court. A sufficient sum of money has been pledged to bear all costs.

The city license ordinance was in effect several years before the State automobile law, which requires $1 registration fee and expressly prohibits any municipality for exercising any ordinance conflicting with the law. The city license fee is $3 yearly, and not more than one-half of the owners in the city have paid it this year.

NON-RESIDENTS HAVE TEN DAYS IN DELAWARE.

WILMINGTON, DEL., Dec. 16.—The new automobile law, which goes into effect in Delaware, January 1, is the same as the existing law, except that it allows non-residents the privilege of being in the State for ten days without taking out a license; terminates all licenses on December 31 of each year; places the age limit for chauffeurs at 16 years; places dealers and manufacturers in a special class, making one license good for several cars; prohibits loaning, licensing, or using unregistered cars, and provides a fine up to $100 or imprisonment up to 30 days upon an intoxicated person operating a car.

AUTOWAY FROM LAKEWOOD TO QUAKERTOWN.

ASBURY PARK, N. J., Dec. 16.—Good news for automobilists is contained in the announcement that in Lakewood a movement is on foot to build a road from Lakewood which will connect that New Jersey winter resort directly with Philadelphia. The project bids fair to go through, and when it does autoists will have one of the finest and straightest speedways in this part of the country. Philadelphians will find it as easy to run up to Lakewood as to go to Atlantic City. It will also make another route for New York automobilists in their runs to the Quaker City. It is given out that George Gould, John Hays Hammond, and William Hamilton are the backers of the project at the Lakewood end, while the Philadelphia contingent is also representative. Work has begun on the Lakewood end. It will be a turnpike wide enough for three cars to run abreast, and all such arrangements as drainage, culverts, and fences will be carefully worked out. A sufficient number of toll-keepers will be installed and paid by the autoists to keep the road in good condition. The highway will run from Lakewood through Lakehurst, New Egypt, and so on direct across New Jersey, to the Camden ferries. If the work is pushed as fast as is now planned, the road will be ready early next year.

CONCERNING THE OVERHEATING OF AUTO ENGINES

BY H. H. FRANKLIN.

MANY people have entirely wrong ideas on the subject of overheating an automobile engine. As everybody knows, power is obtained in a gasoline motor by turning the gasoline into heat. Hence the motor which utilizes the largest percentage of the heat in the gasoline is the most economical.

Lubrication determines the degree of heat at which a motor can be safely run. The hotter you can run your engine, and still lubricate, the greater efficiency you can get out of your gasoline. Cylinder oil "flashes" or burns at about 450 degrees. So long as the inside of the cylinder is kept below that temperature the pistons can be properly lubricated.

In a water-cooled motor the working temperature is determined by the steaming point of water. Water boils at 212 degrees; it steams freely at 200 degrees. Hence a water-cooled motor cannot run above 200 degrees, because at that point the water evaporates so rapidly that it is soon lost. As soon as the water is gone the empty water-jackets hold the heat, instead of allowing it to radiate. Then the temperature quickly runs above the burning point of oil and the pistons stick.

The Franklin air-cooled motor works with the outside of the cylinder walls at a temperature of about 350 degrees. This means that the inside is hot enough to get good efficiency out of the gasoline, and it is still far enough below the "flashing" point of oil to give a big margin of safety.

The water-cooled motor running at about 200 degrees obtains less power from the gasoline consumed than an air-cooled motor, like the Franklin, running at 350 degrees. The hotter the motor, the greater its efficiency. On the other hand, the water-cooled motor goes out of business at about 30 degrees, because then the water freezes and something bursts.

THE AUTOMOBILE

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Influence of the Parts Maker on Auto Design. Though the subject is dwelt upon from time to time in the automobile press, the importance of the rôle carried out by the manufacturer of parts seldom seems to be appreciated at anything like its real value. It may be for the reason that the majority of automobile builders do not like to admit that Doe's gearboxes and Roe's steering gears enter into the make-up of their productions, not to mention rear axles of another make, and frames, brakes, or any one of a half dozen other components that might be cited. Such an admission might be considered as a tacit avowal of the fact that the maker in question was really nothing more or less than an assembler, instead of a builder of automobiles—and all wish to have the latter reputation.

However, it is practically an impossibility to draw a definite line of demarcation where assembling ends and building begins. It is generally admitted that the use of a stock motor marks the assembler, but after passing that point there are innumerable parts of the car which are purchased from special makers by even the largest builders. Nothing short of a catalogue would suffice to include a complete list of such parts, and credit for the great improvement in their design and construction during the past few years is certainly due, in the great majority of instances, to the parts maker. Two years ago, when the flanged mud-guard first made its appearance, the observer was considerably struck by the unanimity with which leading makers had adopted it—overnight, as it were. That such a number of widely separated makers had conceived and carried out an idea of this kind simultaneously seemed more than a coincidence and investigation proved this supposition to be unfounded. Here, as on many other parts of the car, particularly such as the gearbox and steering gear, it was merely an illustration of the influence of the parts maker on the design of a large number of makes.

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Development of Speed and Distance-Recorders. Among the many things that the automobile has brought in its train few have been carried to such a state of development in the same length of time as is the case with what has come to be familiarly known as the "speedometer," through the fact that this was the trade name given his product by a pioneer maker of these instruments. Distance covered appeared to be the only information desired by the cyclist regarding his travels, so that similar attachments designed for the two-wheeler never got beyond that stage, and it remained for the automobile to be responsible for the production of this entirely new type of instrument. Numerous makers have entered the field, and a correspondingly diverse number of instruments has been the result, but with few exceptions all seem to have carried their special systems to a high standard of efficiency and accuracy.

In the course of a few years these instruments have become so universally introduced as now to form an almost indispensable part of the car. The exhilaration of speed is made doubly alluring by definite knowledge of the rate attained, and this indisputable evidence forms the foundation of endless tales of drives at a high pace. With such inducements as this, coupled with season and trip mileage figures, on one hand, and the stern necessity of keeping within the absolute letter of the law in so many places, on the other, it is not strange that the demand for speed and distance indicators has grown to such amazing proportions during the few years that they have been on the market. At first their use was confined to a very large extent to the high-powered cars, on which even the cost of the highest-priced instruments formed but a negligible fraction of the cost of the car itself, and it was an early fad to have the dash ornamented with as much as could possibly be put on it. For that matter, the question of price has served to restrict the use of the speedometer, more or less, to cars selling above a certain price-limit, but within the past two years more extended experience in the manufacture of these instruments, as well as greatly improved facilities for turning them out, have served to bring them within the reach of even the small car owner, so that there is very little doubt that within comparatively few years their use will be universal.

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Extreme Case of Obeying the Law to the Letter. Nothing is better calculated to bring about reform in traffic speed regulations than a rigorous application of existing laws. A New Jersey automobilist who, like many others, had chafed under the speed restraining regulations of more or less authoritative bodies, relates how he was brought to see the error of his ways and penitently resolved at all times and under all circumstances to maintain the exact legal rate of speed. At the same time there was born within him a love for driving on the street car tracks. When half a dozen trolley car drivers found they had to follow in a ten-mile-an-hour procession because of an automobile on the tracks, aid was demanded of the police, only to find that there was no law compelling other users of the roads to keep off the tracks, and that to ask the automobilist to go faster for the convenience of the trolley cars was more than could be expected of a policeman. Further, on looking up the matter, it was discovered that the franchise of the street railroad company limited the trolley cars to a lower rate of speed than that accorded later to automobiles. As to the wisdom of the policy of the New Jersey driver even automobilists are likely to be divided; its legality, however, is beyond question. As an object lession it is effective—too effective probably, for it visits the iniquities of the guilty upon good and bad alike.

WHAT IS BEING DONE ON THE LONG ISLAND MOTOR PARKWAY

A LARGELY attended meeting of the board of directors of the Long Island Motor Parkway, Inc., was held in the general offices of the company, 527 Fifth avenue, New York, at 11 o'clock Thursday, December 12, with W. K. Vanderbilt, Jr., presiding.

The president reported at length regarding the activities of the various committees, the chief engineer, the general manager, and the treasurer, and submitted reports and blueprints indicating that thirty-four miles of right of way between the Jericho Turnpike, at Mineola; Fulton street, in Hempstead Village, and Garden City on the west and Lake Ronkonkoma on the east, had been secured, that detailed surveys had been completed, applications made to the various boards of supervisors, highway commissioners, etc., for their consent to cross the various highways between these points, either above or below grade, and that the engineering department was now preparing detailed tracings for these various crossings, including the three crossings of the Long Island Railroad at Mineola, Central Park, and in Hempstead.

The chief engineer reported on various types of road construction which he was investigating, and on which tests were now being made. The chief engineer and the general manager further reported that the right of way between Riverhead town and Riverhead village had been surveyed in full, and that the Riverhead Board of Trade had worked most enthusiastically in furtherance of the project. Reports were made showing that the rights of way between Lake Ronkonkoma and Riverhead town were being secured.

LOOKS LIKE A STOCK CHASSIS RACE AT SAVANNAH IN MARCH

SAVANNAH, GA., Dec. 16.—The Savannah *News* in a lengthy article printed yesterday tells of the visit of representatives of the American Automobile Association who came to Savannah at the invitation of the Savannah Automobile Club and the civic and trade bodies of the city, the trip here being for the purpose of investigating the claims of Savannah as the place for holding one or more long-distance road races. Frank G. Webb, vice-chairman of the A. A. A. Racing Board, who served as the designated substitute of Chairman Jefferson de Mont Thompson; N. H. Van Sicklen, chairman of the Technical Board, and Frederick H. Elliott, secretary of the national organization, composed the visiting trio.

Mayor Tiedeman, County Commissioners Albert Wylly and A. B. Moore; President Williamson, of the Chamber of Commerce; President Wright Hunter, of the Cotton Exchange; President W. B. Stillwell, of the Board of Trade; President F. C. Battey, of the Savannah Automobile Club; Chairman R. J. Davant, of the City Council, and Harvey Granger and J. J. Rauers, prominent members of the Automobile Club, escorted the visitors.

The *News* story contains the following: "The three men were sent to Savannah by President Hotchkiss of the A. A. A. to look over the course and see what the prospects were for the holding of the national stock car meet on the local course in March.

"As has been held all along by the men handling the local end, the course appears to be the best of its kind on this side of the Atlantic and it is for that reason that the A. A. A. have sent its most representative members to personally investigate. They are more than pleased."

A final conference was held to-day and this afternoon the visitors left for the North.

HOW THE FAMOUS AIRSHIP "PATRIE" WAS LOST TO FRANCE

PARIS, Dec. 10.—The primary cause of the loss of the French military airship *Patrie* was the breakdown of the ignition system through the mechanic's jacket catching in the distribution gears. The airship was over Toul, and but two miles of accomplishing its journey of 150 miles from Paris to Verdun, when the mechanic allowed his loose jacket to engage in the gears. The Panhard engine was fitted with double ignition, but as distribution was from the same shaft, the accident put both out of business. It would have been easy to descend and drag the ship to its shed, but in the spirit of *amour propre* the pilot decided to repair the damage and enter under his own power. All night the airship was held by 800 troopers, and next morning moved to a more sheltered position, secured by anchors and held by soldiers. There appears to have been negligence in not attaching the valve cord to a bag of ballast, for on the second squall, when the airship was torn away from the troops, it was impossible to find it among the mass of cordage. Thus the *Patrie* rose into the air with its envelope fully inflated and no means of the gas being liberated automatically.

Henry Deutsch de la Meurthe's *Ville de Paris*, offered by its owner to the war authorities, has been accepted by General Picquart and will enter into service immediately. The *Lebaudy*, practically a sister ship of the *Patrie*, has been ordered to be put into commission also. Four other ships of the *Patrie* type are also projected, one of them, the *Republique*, being ready for delivery in March, and the *Democratie*, *Justice* and *Vérité* to be started as soon as funds are devoted by Parliament. The value of the lost *Patrie* is declared to be $60,000.

NEW YORK AUTO TRADE MAY HAVE SPRING OUTDOOR SHOW

IN order to present something in the way of an exhibition at a time when automobile buying is at its height, the dealers of New York City, as represented by the New York Automobile Trade Association, will probably hold a show when the spring season opens. In accordance with a suggestion made at the last meeting of the association, at its headquarters in the Motor Mart, Sixty-second street and Broadway, last week, this is to take the form of an open-air affair combined with a race meet, having for its venue the old Morris Park race track. As the betting ring under the huge grand stand is capable of accommodating as many cars as Madison Square Garden, this location is considerably favored, and Secretary Stratton, of the association, has been instructed to ascertain the feeling of the trade in the matter and see what arrangements could be made.

WORCESTER CLUB HAS MANY EX-MAYORS.

WORCESTER, MASS., Dec. 16.—The Worcester Automobile Club had the second smoker of its season Tuesday night, when Alfred Thomas, of the board of governors, told the members of his experience in England and the Continent last summer in his Pierce Great Arrow touring car. He told of motoring conditions in England, France, Belgium and elsewhere, and besides giving general conditions told of personal experiences. He covered 3,500 miles abroad.

Election returns were likewise given at the smoker, for it was city election day. James Logan was elected Mayor, but the leading feature of the election was the majority of 962 for no license. Worcester will, after May 1, 1908, when the licenses now in existence will expire, be the largest "dry" town in the country. This will effect the Worcester Automobile Club in common with all other clubs in the city, and the board of governors will soon meet to decide on the policy which will be followed in the café department, owing to the changed conditions after May 1.

Mayor John T. Duggan, ex-officio an honorary member of the club, whose term of office will expire January 6, has announced his intention to become an active member. In this he follows the example of his predecessors, ex-Mayors Edward F. Fletcher and Walter H. Blodget.

MORE CLUBS FOR MICHIGAN STATE BODY.

GRAND RAPIDS, MICH., Dec. 16.—J. R. Jackson, chairman of the membership committee of the Michigan State Automobile Association, has just formed a club in Hart consisting of 25 charter members, which, of course, becomes a member of the State body. The officers are: President, Dr. L. P. Mulder; vice-president, J. D. S. Hansen; secretary, J. D. McClellan; treasurer, Carl F. Flood. Besides the officers, the board of governors will consist of J. W. Nicholson, John S. Fisher and Rupert Steele.

Mr. Jackson is working with the Muskegon autoists and expects soon to have an association formed in that city, which has a rapidly growing colony of automobile owners.

CANADIANS AND "CHAUFFEUR'S RAKE-OFF."

TORONTO, ONT., Dec. 16.—The nuisance known as the "chauffeur's rake-off" has become so pronounced in Canada of late that the Ontario Motor League has taken steps to prevent it, by organizing a chauffeurs' bureau in connection with the League. The purpose of the bureau is to protect owners of cars who employ chauffeurs from unscrupulous practices on the part of their drivers. Numerous complaints have been made that chauffeurs exact, or try to exact, a commission from dealers on supplies purchased from them for their employers. Cases have been known where this having been refused, the chauffeur has induced his employer to take his car to another garage.

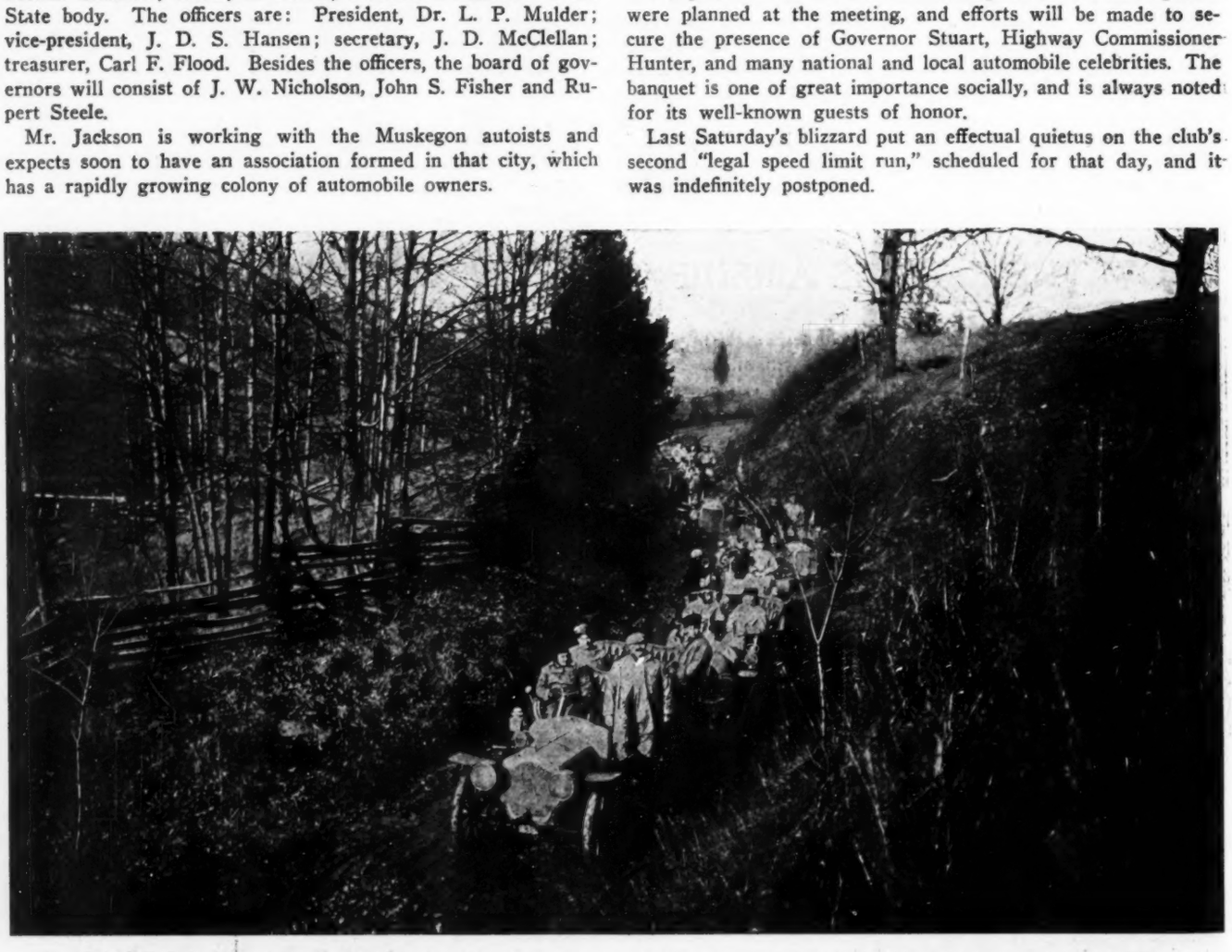
The chauffeurs' bureau will undertake to investigate, on request of members of the Ontario Motor League, the record and character of any chauffeur who may apply for employment. It will also keep a register of competent and reliable chauffeurs who are looking for employment, and place them in touch with owners needing drivers. Details of the organization are being worked out at the secretary's office in Toronto.

PHILADELPHIANS TO HAVE NOTABLE BANQUET.

PHILADELPHIA, Dec. 16.—At the last meeting of the Automobile Club of Philadelphia, the good work being done by the Automobile Club of Delaware County was recognized by an appropriation of $100 to assist the hard-working suburbanites in their good roads campaign. Twice that amount was placed at the disposal of the sign committee, which is engaged in marking all the principal routes leading into this city.

The preliminaries for the annual banquet of the Philadelphians were planned at the meeting, and efforts will be made to secure the presence of Governor Stuart, Highway Commissioner Hunter, and many national and local automobile celebrities. The banquet is one of great importance socially, and is always noted for its well-known guests of honor.

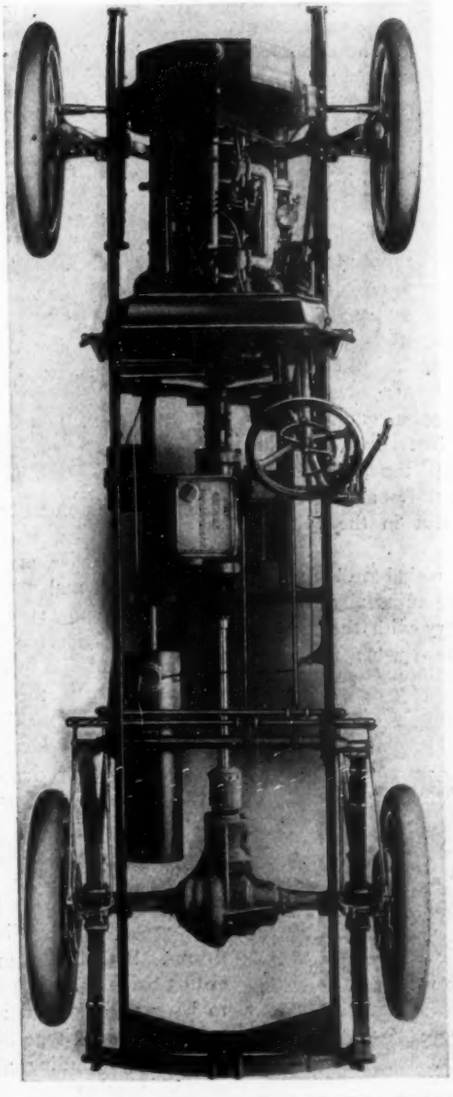
Last Saturday's blizzard put an effectual quietus on the club's second "legal speed limit run," scheduled for that day, and it was indefinitely postponed.



CONTESTANTS IN THE RECENT SEALED BONNET CONTEST OF THE AUTOMOBILE CLUB OF WASHINGTON HALTING EN ROUTE.

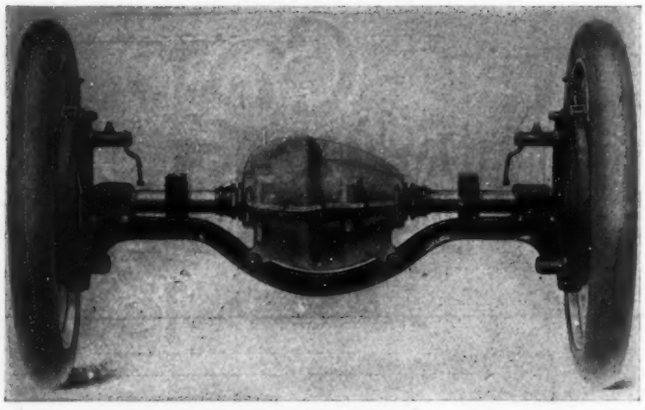
CONSISTENT adherence to a well-outlined plan of chassis has marked the De Luxe car, built by the De Luxe Motor Car Company, Detroit, Mich., ever since it has been on the market, and in presenting its model for 1908, the company calls attention to a number of small changes which may be most aptly classified under the category represented by the now time-honored term "detailed refinements," as none of them is a departure from previous standards in any sense of the word. Chief among these changes has been the adoption of internal expanding and external contracting metal to metal brakes, of the shoe type, centered on the driving wheels, in place of the brakes formerly located on either side of the transmission. A dual system of ignition has replaced the battery and coil outfit of last year, the Eisemann high-tension magneto having been adopted for the working side of the system, while the standard, four-unit coil type, with low-tension timer is relied upon for emergency purposes. Tire sizes have also been increased, 4 and 5-inch front and rear sizes replacing the 3 1-2 front and 4 1-2-inch rear used last year, while riding has been made still easier by the use of Lemoine three-point suspension rear springs, instead of the individual semi-elliptic springs formerly a feature. The clutch has likewise been improved by the abandonment of the plain leather-faced type, in favor of a metal to metal cone provided with cork inserts, which makes disengaging much easier, beside extending the efficient life of this essential of the car considerably.

With the exception of the improved oiling system, this suffices to sum up the changes made. Where the latter is concerned, a continuous circulating system has been introduced to maintain the crankcase supply of oil at a constant level at all times. This consists of an auxiliary oil tank, placed directly beneath the crankcase proper, and from which a pump, operated by the camshaft, serves to raise the oil to the crankcase. The oil-pan of the latter is provided with overflow stand pipes, the outlets of which are placed at exactly the level desired to be maintained, so that all excess oil finds its way back to the tank by gravity, and is again pumped up, or circulated. In addition to this provision, a six-tube, mechanical force-feed oiler having sight-feeds on the dash, is provided. Four of the feed tubes are taken to the cylinders, one to the pump bearing and one to the timing gears, from which it will be evident that two independent systems of lubrication are, in reality, employed, and the first is one that is greatly appreciated by the average driver as it entirely eliminates any question of the height of the oil in the crankcase, whether the car has been driven 100 or 1,000 miles. The only attention required by such a system is a periodical flushing out and replenishment of the oil supply, as the latter loses its lubricating properties after long service.



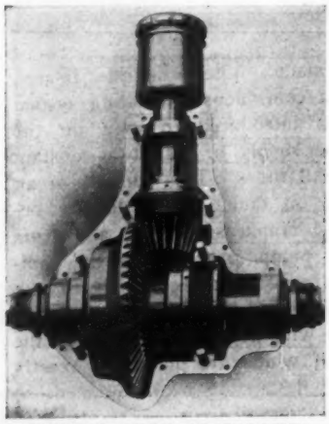
PLAN VIEW OF CHASSIS, 1908 CAR DE LUXE.

So far as the remainder of the motor is concerned, it is distinguished by all those features of design and construction that have been identified with the De Luxe car in former models. The cylinder dimensions are 5-inch bore by 5 1-4-inch stroke, while the horsepower rating is 50. Both the inlet and exhaust valves are located in the cylinder



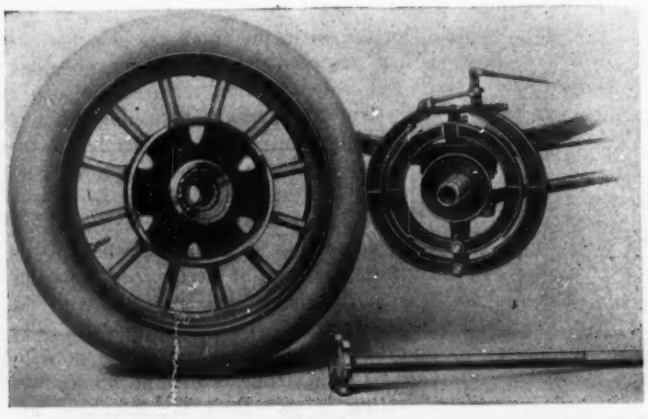
THE DOUBLE REAR AXLE DRIVING AND SUPPORTING MEMBERS.

heads, and are inclined at an angle of 20 degrees to the vertical, which makes it possible to give both of them a diameter equivalent to half that of the cylinder itself. They are operated by double-contact rocker arms, one push rod and rocker arm serving to operate each pair of valves, so that the engine is particularly simple in this respect. These rocker arms are chrome nickel-steel forgings and are supported on yoke-topped, adjustable pillars, one end of the arm resting on the top of the exhaust valve stem, while part of the other end acts as the contact for the intake valve end and the second part is hooked to the push rod. This, accordingly, necessitates the use of but four push rods and four cams. In addition to the adjustable supporting pillar, further provision is made for timing the valves by giving the push rods adjustable connections at their upper ends. Another advantage of this construction is that any of the valves may be removed without disturbing their timing adjustments. Instead of relying entirely upon the ground fit employed on the intake-valve cages last year, this has been supplemented by a sleeve nut which holds the intake valve cage to its seat in the cylinder head, making an absolutely tight joint.



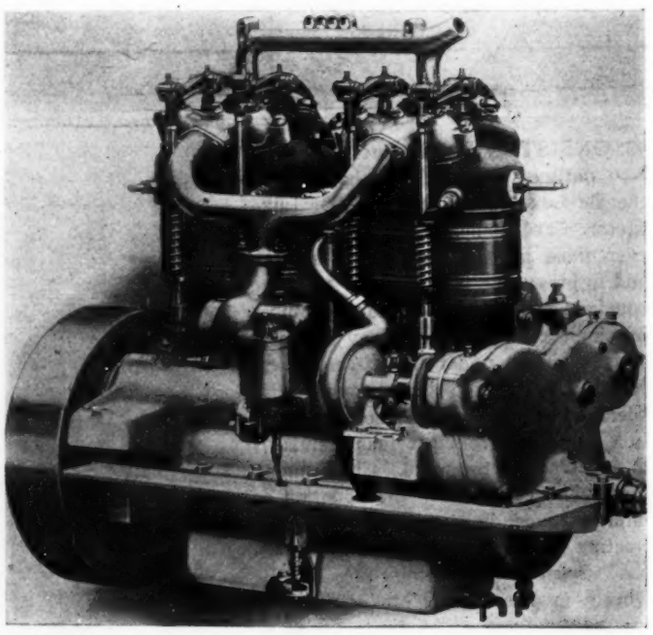
SHOWING BEVEL GEAR DRIVE.

The crankshaft is a one-piece, chrome nickel-steel forging of high tensile strength, supported on three unusually liberal-sized D. W. F. ball bearings. It is customary with the makers of the latter bearings only to guarantee them when they are



TYPE OF BRAKES, DRIVE SHAFT AND BALL-BEARING OF WHEEL.

of the size required and have been installed in accordance with the recommendations of their own engineers, but in the De Luxe the designers have specified a size larger than those called for by the bearing makers. As is the case with the motor, practically every essential of the car has been designed exclusively for it. This will be particularly evident in the case of the rear axle, which is of a double type, upon which patents have been granted. As will be seen from the accompanying illustration of it, the entire weight is carried on the solid, one-piece, chrome nickel-steel axle of I-beam type, very much resembling a typical forward axle with its downward sweep, which is to allow for the differential and drive housing, as well as to permit of accurate alignment of the driving shafts. The second half of the axle is really not an axle at all, but is simply the driving mechanism, which has no part whatever in carrying the weight of the vehicle. The driving shafts have squared ends fitting the differential pinions, and extending through the outboard tubular ends of the I-beam supporting axle, where they engage the hubs of the driving wheels by means of a special clutch device of substantial size which is forged integral with the shaft. The details of the



MOTOR DE LUXE FROM THE CARBURETER AND VALVE SIDE.

bevel gear drive are also shown in one of the accompanying illustrations, and this essential, like practically every part of the car, is supported throughout on ball bearings. Six of the D. W. F. imported annular type are used here alone, while five are employed in the gear-set, four in the steering-gear construction, six in the driving axles, one in the clutch and eight on the wheels, making a total of 33, counting those on the crankshaft. As already mentioned, the brakes are now centered on the driving wheels, where they are located in large steel drums. They are of the internal expanding and external contracting type, and both are equally effective in either direction, the former constituting the running brake and being operated by pedal, while the latter is the emergency and is controlled by the hand lever. A very simple equalizing device insures an evenly distributed contact on each of the brake drums. Both brakes are lined with special friction surfaces consisting of a special composition of bronze, which are adapted to be easily replaced at a nominal expense, when worn.

One standard type of chassis will be built, but several models are listed, including a roadster, which sells at the same price as the touring car, $5,000, a limousine and landaulet being listed at $6,250, respectively.

NEXT THE IMPORTERS AT MADISON SQUARE GARDEN

WHEN cackling hens, cooing pigeons and quacking ducks have been noisily turned out of Madison Square Garden next Saturday night, a new staff will rush in to fit the building for the Importers' Automobile Salon, a goodly share of which is now being brought from Europe on various liners. On Saturday, December 28, America will be given her first look at the products of French, German, Italian, English and Belgian factories for the 1908 season, and allowed to gaze until 11 o'clock on the following Saturday night.

A complete transformation of the Garden is promised for what the promoters have entitled the "Paris Salon Transplanted," the decorative scheme to be unique, artistic and altogether *chic*. The interval of six days between the departure of the roosters and the arrival of the Europeans would not be sufficient to install the decorative work had not all the preliminaries been pushed ahead for the past two or three weeks at the decorators' own shops. Thus everything is expected to be in readiness for the opening hour.

A full list of the exhibitors, together with the cars that will be shown on the main floor of the Garden, is as follows:

Auto Import Co. (Rochet-Schneider); Archer & Co. (Hotchkiss); Brewster & Co. (imported cars); S. B. Bowman Auto Co. (Clement-Bayard); C. G. V. Import Co. (C. G. V.); Darracq Motor Car Co. (Darracq); Delahaye & Pilain Import Co. (Pilain-Delahaye); De Dietrich Import Co. (De Dietrich); Fiat Automobile Co. (Fiat); Itala Import Co. (Itala); Isotta Import Co. (Isotta-Fraschini); Martini Import Co. (Martini); L. P. MacNamara (Renault); Maja Co., Ltd., Am. Br. (Maja); Percy Owen (Bianchi); Panhard & Levassor (Panhard); Palais de l'Automobile (Delaunay-Belleville); J. M. Quinby & Co. (imported cars); Rothschild & Co. (imported cars); Rolls-Royce Import Co. (Rolls-Royce); Renault Frères Selling Branch (Renault).

A list of the tire, accessory and publishing concerns which will occupy the elevated platform and mezzanine floor, subject to a few possible changes at a later date, is as follows:

H. T. Alexander Co.; American Chauffeur; Acetyvone Co.; Automobile Topics; Auto Supply Co.; Robert Bosch; S. F. Bowser & Co.; Continental Caoutchouc Co.; Class Journal Co.; Central Automobile Top Co.; Cole & Woop; Comptori d'Innovations Pour Autos; Dow Tire Co.; Diamond Rubber Co.; Fisk Rubber Co.; B. F. Goodrich Co.; Glaenzer & Co.; Healey Leather Tire Co.; Hartford Suspension Co.; Hartford Rubber Works Co.; Isaac G. Johnson & Co.; Leon Mann Co.; Lavalette & Co.; Motor; Charles E. Miller; Michelin Tire Co.; National Sales Corporation; N. Y. & N. J. Lubricant Co.; Pneu l'Electric Co.; Pennsylvania Rubber Co.; Leon Rubay; Spare Motor Wheel Co.; S. Smith & Son; Samson Leather Tire Co.; C. E. Splitdorf; Victor Shock Absorber Co.; Warner Instrument Co.; Wood Mfg. Co.

DETROIT WOULD HAVE CONTINUED EXCEPT FOR ST. LOUIS

DETROIT, MICH., Dec. 14.—Unqualified success crowned the first annual show of the Detroit Automobile Dealers' Association, which closed to-night at Riverview Park. In point of attendance all expectations were exceeded, while a careful canvass of those exhibiting brings forth the statement that the aggregate amount of business done was better than at any previous show held in Detroit. Not all this was real money. Many sales were made outright, and others booked. But possibly the most encouraging feature was the number of inquiries and the interest shown by live "prospects."

Several dealers went into the show with fear and trembling, feeling that with the financial flurry still fresh in mind and the holiday season at hand there was little to hope for. That they were disappointed—and agreeably, too—in the outcome is a matter of record.

So enthusiastic were the dealers and so marked the interest of the public that the question of continuing the show for another week was freely discussed. Had it not been for the fact that a number of the exhibits were going to St. Louis, the show would have been continued. As it is, with this season's success in mind there is every probability of next year's show lasting a fortnight.

To the efforts of Chairman Alex. I. McLeod and Manager E. LeRoy Pelletier can be attributed much of the success achieved, although they were backed up by the Detroit Automobile Dealers' Association at every turn.

ST. LOUIS SHOW OPENS WITH MOST OF AMERICA'S FINEST

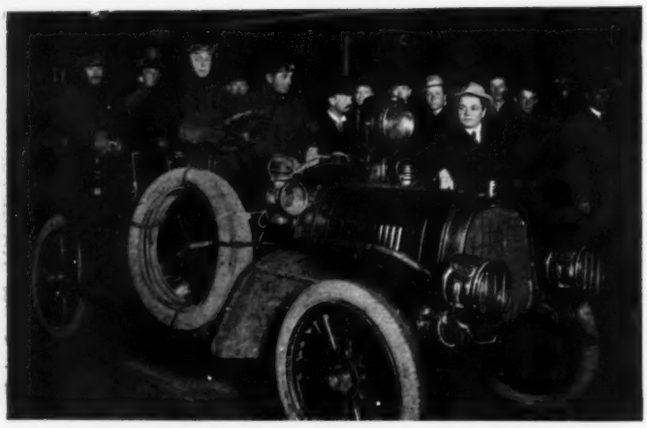
ST. LOUIS, Dec. 16.—Again are the sleek show beauties—the shining representatives of the leading American makers—on exhibition, this time on the banks of the Mississippi. Rushed to Detroit from Chicago, they have made another quick jump here, and a small army of attendants were set to work transferring the contents of the special train to the exhibition spaces in the big Jai Alai building on Friday, where a second division undertook the renovation of the toilets of the many much-exhibited cars, which had lost more or less of their pristine brightness during the many miles of railroad travel they have had since the beginning of the show season. The show is the second annual event held under the auspices of the St. Louis Automobile Dealers' Association, and is being well managed by D. M. Strauss. What with the large number of complete exhibits brought on from the national show and the unusually good showing made by the local dealers, this year's affair far eclipses its predecessor, and this is also true where the decorations are concerned, the management having spared no pains to make these in keeping with the importance of the occasion. The show opened Saturday night and the attendance was excellent. St. Louis forms an exception to the general run of automobile show cities and keeps open house for the public on Sundays, which is really one of the big days here. Another one this year will be "society night," which will be Tuesday, when the admission will be raised to one dollar.

PENNSYLVANIA 1908 LICENSE TAGS ARE OUT.

PHILADELPHIA, Dec. 16.—The first of the 1908 Pennsylvania license tags was issued from the offices of the State Highway Department at Harrisburg last Thursday. They have a yellow ground with black lettering. Over two thousand applications have already been filed for them.

RACING DRIVER TO HANDLE WAR AUTO.

PARIS, Dec. 11.—A Panhard automobile fitted with a Hotchkiss quick-firing gun has been sent to Oran to be used against the rebellious tribesmen. Captain Genty, head of the army automobile corps at Vincennes, will be in charge; the captain has competed in a number of races under the name of De la Touloubre.



HOBENICHT IN HIS POPE-HARTFORD THAT TRIED FOR RECORD.

LOST RECORD IN SIGHT OF GOAL.

SAN FRANCISCO, Dec. 10.—Another attempt was made recently to lower the record made by Fernando Nelson, in his 40-horse-power Columbia, between San Francisco and Los Angeles. The start was made December 3 at 10:30 P.M. by Rudolph Hobenicht, in his Pope-Hartford touring car. Hobenicht had with him Jack Fleming, who has made quite a reputation as a driver. As the record was made with four passengers aboard, Hobenicht had to carry two others, who were James Fleming and Ernest Alford. At the appointed time R. R. l'Hommedieu gave the word and the car shot down Guirero street and out the Mission road to the country. It was a wild ride all night at every point. Hobenicht was ahead of Nelson's record. Everything went along smoothly until after Santa Maria had been passed and the car was nearing Los Olivos, while Hobenicht was at the wheel. Suddenly the forward left wheel dropped into a rut and away went the spring. There was no chance to make repairs until Santa Barbara was reached. They shouted to a party in one of the towns through which they were passing to 'phone to Santa Barbara and tell those there of their trouble. A short time after the engine practically stopped from overheating. An examination was made and it was found that the petcock on the radiator had unscrewed, an accident heretofore unknown. They had to wait until the engine cooled before they could proceed, which cost them over an hour. Where the stop was there was not a tree or shrub in sight from which could be cut a plug to stop up the radiator. Fleming stuffed it up with his handkerchief, which was only a makeshift affair and leaked so badly that they had to stop time and again to take water. Finally Santa Barbara was reached. There they met "Bill" Reuss, of Los Angeles, who took the wheel.

Then began one of the wildest rides in the history of the game on the coast. Reuss opened up the car to the limit and just let her go. Through two of the hardest mountain passes the car flew at a frightful pace. It was just after getting through the first pass that in making a sharp turn the tires on the front wheels were torn off and the temporary repairs to the broken spring lost. The tires were put on, and the wild ride resumed with the car resting on the front axle. There was never a let-up on the pace, and the car was brought into Los Angeles ahead of time. It was just after getting within the city limits that the car had to cross a railroad track. The pace was too fast and the front wheels turned at right angles to the car and the next second it was hopelessly ditched. The car went over with a crash and the four fell clear of the machine and luckily escaped without the slightest injury. At the time of the accident it was only five blocks from the finishing line with eighteen minutes to the good. The fact that the record was practically broken has caused Homer Boushey, the head of the house which handles the Pope cars in San Francisco, to decide to make the attempt again.

THE OPTIMISM OF THE SALES MANAGERS.

F. C. Gilbert, Sales Manager for Pope-Toledo: "It is wonderful what can be accomplished by thought rightly directed. The great success of the Chicago Automobile Show was a grand demonstration of 'thought-power.' The managers of the show were determined to have everyone come in the right-thought attitude, to boost, and the result was splendid. Everybody I met was happy. I have long been a student of 'thought rightly directed' as a great factor in a sales campaign. When the power of thought is understood and properly used we will reach the zenith in commercialism; no panics, no great failures; all will be harmony. Each man will get his share of success, because when we become sufficiently enlightened to live by and work by 'thought-power,' our present jealousies and strifes will become as nothingness. The tendency of the times is toward the development of this heretofore latent force. The outlook is very good."

R. M. Owen, General Sales Agent for Reo and Premier: "It was very gratifying to me to learn of the hopeful attitude which our dealers exhibited at the Chicago Show. This was notably true of our agents in the West and South. That this optimism on the part of our agents is genuine is shown in the fact that our November and December deliveries have been much larger than in any previous year. This is probably due somewhat to the earlier shows. Be that as it may, it is nevertheless true that conservative business and professional men throughout the country have not in the least abated their interest in the economy, efficiency, convenience, and many other advantages afforded by the high grade, moderate-priced, simple, reliable and durable power-driven vehicle. The 1908 outlook is very encouraging with us."

E. C. Cordner, Studebaker Branch, New York City: "While we have had a steady demand for enclosed cars, and have made a number of sales, we had not anticipated much retail demand for touring cars at this season of the year, and have been most agreeably surprised at the interest taken in this type of car and the number of sales made. In spite of the alleged stringency in the money market, the outlook, as far as we are concerned, is certainly most pleasing."

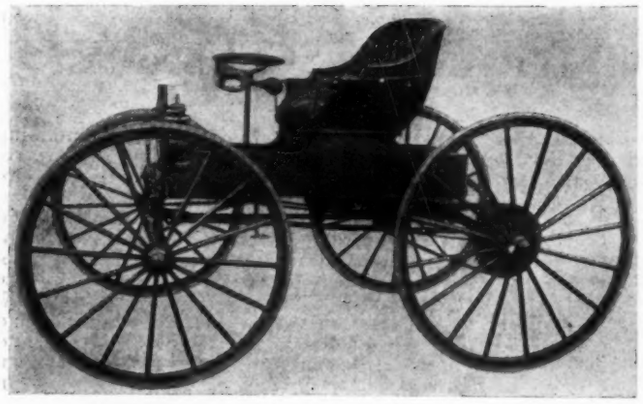
FRANKLIN MOTOR COMPLETES ITS TEST.

CHICAGO, Dec. 16.—On the closing day of the show here there was brought to a successful termination the strenuous test of a Franklin air-cooled motor that had been undertaken by the local branch to demonstrate its cooling powers under adverse conditions.

During its continuous, seven-day run the motor made a non-stop record of 168 hours, its performance being the equivalent of a distance of 3,500 miles. The gasoline consumption was 40 miles to the gallon, and the lubricating oil but one gallon for each 300 miles. At 12:30 P.M. on the last day the motor was stopped long enough to replace the muffler, and was then immediately restarted and the car taken out on the street, where it was driven about steadily until 10:30 that evening.

CLAIMS FINEST GARAGE IN COUNTRY.

PHILADELPHIA, Dec. 16.—To-morrow there will be opened by the Keystone Motor Car Company its new concrete garage and salesrooms at 216-220 North Broad street, said to be the finest building of its kind in this country. Fifty-three feet wide by 200 feet in depth and four stories high, it is fitted up with every possible convenience, not alone for the comfort of its patrons, but for the quick transaction of the company's business. The salesroom, which extends across the entire Broad street front, is two stories in height, the handsomely ornamented ceiling being studded with numberless electric lights, while the tessellated floor is strewn with handsome rugs. The Keystone concern handles the Packard and Buick.



SUCCESS AUTO BUGGY FOR 1908—FOUR HORSEPOWER.

PIONEER AUTO-BUGGY CONSTRUCTORS.

Though he has been building automobiles ever since 1896, when by dint of a great deal of labor and much perseverance he succeeded in installing as light a stationary engine as was procurable, beneath an express wagon, and made it run, John C. Higdon, of St. Louis, who is the president of the Success Auto Buggy Manufacturing Company of that city, has always been a firm believer in the future of the buggyabout type and has never devoted his attention to any other form of construction. Quite in contrast with the ton or more of engine which he was compelled to utilize on his first car, is the neat little engine which characterizes the 4-horsepower Success Auto-Buggy of 1908. It is of the single-cylinder, inclosed flywheel type and is attached to one end of a special angle-iron frame extending clear across the body. The motor drives to a countershaft carrying a planetary change-speed gear through a chain and sprockets, and from this another chain drive is taken to a second countershaft, forward of the first. This second countershaft extends outboard on the left-hand side and its alignment with the rear axle is maintained by a distance rod, the final drive being by a third chain and only the wheel on that side of the vehicle being driven, thus dispensing with a differential. This machine sells for $250, and not a few of them are in use in the West.

The company also lists a much more ambitious model for 1908, in the shape of the 10-horsepower Success Auto-Buggy, which is fitted with a double-opposed, four-cycle, air-cooled motor, the builders also giving the option of a 12-horsepower water-cooled motor of the same type at a slight extra charge. Both cars have the regular buggy running gear and body, with wheel steer, and with the exception of the power plant and double-chain drive of the latter the specifications are practically the same. The 10-horsepower model lists at $400.

TITUS MAKES 24-HOUR TEST ON THOMAS CAR.

NEWARK, N. J., Dec. 16.—Five hundred and twelve miles through snow, rain and slush, have been covered by Fred Titus and John Prowett with a Thomas touring car, in their self-imposed twenty-four hour touring test. The two men and their car from Buffalo made a double run round a circuit comprising Princeton, Trenton, Camden, Atlantic City, Toms River, Lakewood, Freehold and New Jersey, the roads being a fair sample of the good and the bad of the State. In the cars with them were George Walters, official observer, and E. E. Pearce, his assistant. During the run the engine was not stopped and no adjustments were made other than the replacing of two punctured tires. With the exception of the last breakfast, all meals were taken while the car was running, the exception being enforced owing to the exhaustion of the provisions on board. Tests were made by the occupants of the car of various kinds of clothing, but neither leather, rubber, furs, nor felt were able to keep out the cold and the wet.

THAT STARTLING NEW YORK TO PARIS RUN.

Seven cars are declared by *Le Matin* to be engaged in the 'round-the-world tour which it is organizing in conjunction with the New York *Times*. How the run will be made, what route will be chosen, and what the details of the contest will be neither journal is yet able to announce definitely. The *Matin* declares emphatically that towards the end of February the competitors will leave Paris, travel to Calais, cross the English Channel, run up to Liverpool, then embark for New York, where the difficult part of the trip will commence. Four routes are projected for crossing the United States, but the organizers stop when the region of the Bering straits is reached and has not much advice to offer on the best way of getting across Asia.

Marquis de Dion, who had two cars in the Pekin-Paris event, has written to the *Matin* very wisely asking that more time should be granted manufacturers to prepare for the long and dangerous journey. Two months in which to make arrangements for the supply of stores and fuel along the route and for the construction of special cars is manifestly not sufficient. Speaking on the type of car he would use in the tour, the head of the De Dion Bouton firm declares that he will employ a 30-40-horsepower engine capable of driving the car at a speed of thirty miles an hour, but geared to run as low as three miles an hour where necessary. Road wheels will be of sufficient size to give ample clearance in any kind of country and will be equipped with pneumatic tires capable of being dismounted and replaced by wooden rims in the Arctic regions. Four spare air-cooled cylinders will be carried along on each car to replace the water-cooled ones when the coldest regions are reached. A heating apparatus will be fitted to warm up the engine sufficiently to start. At the forward end of the car will be mounted a windlass operated by the motor, by means of which the most difficult portions of the road can be negotiated. Provision for the driver will be secured by means of a leather tent over the body, so arranged as to make the car habitable when it is necessary to camp out.

Two American firms—Hol-Tan and Franklin—which have promised to take part in the run to Paris have not yet announced any detailed plan of action, and, so far as can be learned, have taken no steps for the construction or fitting out of their cars. If the start really is to take place from Times Square, New York City, in March, there is no room for delay. The wiser plan would appear to be to wait until such arrangements can be made to assure the success of the daring enterprise. As the Bering straits can only be crossed in winter, delay beyond March would mean a postponement until the following year.

NATIONAL DEALERS' ASSOCIATION ORGANIZED.

CHICAGO, Dec. 16.—As the result of several meetings held during the course of the show here the organization of an association to promote the interests of those connected with the automobile and supply business was effected. It is known as the National Retail Dealers' Automobile Association, and was launched with a charter membership of thirty, with good prospects of doubling this number within the next few months, as the annual dues are but $2. The officers are: President, C. F. Jensen, of the Steinhart-Jensen Automobile Company, Joliet, Ill.; vice-president, R. Hokanson, Hokanson Auto Company, Madison, Wis.; secretary, J. A. Crum, Krueger Auto Company, Oshkosh, Wis.; treasurer, L. Ohnhaus, Ohnhaus Auto Company, Fort Wayne, Ind. The officers were made members of the board of directors ex-officio, which is comprised of the following three members in addition: Mr. Tanberg, Tanberg Auto Company, La Crosse, Wis.; Mr. Sutter, Sutter & Gamble, Burlington, Ia.; and Don P. McClure, Oskaloosa, Ia. The president appointed a committee of two, consisting of L. Ohnhaus, Fort Wayne, Ind., and N. A. Carlsen, Butte, Mont., to act in conjunction with him in the drafting of by-laws for the association. The next annual meeting is to take place in connection with the 1908 Chicago show.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

A 1908 Franklin touring car of 16 horsepower gave an interesting hill-climbing demonstration at Wilmington, Del., a few days ago, ascending Third street hill, about a 45 per cent. grade, covered with rough cobblestones.

Mrs. Myra E. Roach, of Milwaukee, Wis., claims the distinction of being the only lady driver in the United States to have driven a two-cylinder car over 20,000 miles in three consecutive seasons. Mrs. Roach, who employs a Rambler, drove 8,000 miles the first season, 6,000 the second year, and the same distance in 1907.

The Philadelphia Ford Motor Club recently held the first of a series of winter social gatherings, when two-score members with their wives, husbands, brothers, and sisters, journeyed to Woodbury, N. J., to the home of one of the members. The Fordites of Philadelphia are growing, and at the present rate should reach the century mark before another year rolls round.

The Fort Pitt Motor Mfg. Co., New Kensington, Pa., makers of the Pittsburg "Six," expects to have its first car ready within the next two weeks. Two models will be manufactured, one a six-cylinder runabout with disappearing seat, selling at $1,850, and the other a six-cylinder touring car, selling at $2,250. George Von Rottweiler, general manager of the company, has just completed a trip to the eastern cities in the interests of the new car.

Announcement has been made from the plant of the York Motor Car Company, York, Pa., that a new runabout product, to be known as the 4-40 runabout, or gentlemen's roadster, will be put on the market about the first of the new year. Plans of the new car were submitted to the western agents at the recent Chicago show and many orders taken. Sales Manager H. R. Averill put in a busy week at the Chicago show and established a number of new western agencies. During the past few weeks three carloads of Pullman touring cars were shipped to San Francisco.

An incident depicting the cheerful kindliness that has been born of the successful opposition of the automobile to the horse-drawn vehicle was witnessed during the recent days of slippery streets in New York. At the direction of the officers, the street in front of the Rainier Company's place, on Broadway at Fiftieth street, was kept strewn with ashes for the benefit of the suffering horses. The Rainier cars and others running past were having no trouble, and in a business way there was "nothing in it" for this concern to help along the horse, so it was a piece of magnanimity very becoming to a company of such substantial standing.

A recent story in a newspaper of Bangkok, Siam, goes to prove that "nature faking" is not an exclusive American institution. The story in question relates how an attack was made on an automobile by one of two white elephants which were being driven to the river for their morning bath. This elephant is credited with seeing in the automobile, which was a Rambler car owned and driven by C. G. Edwards, of Bangkok, a strong competitor in the transportation business, and to have been imbued with the idea of accomplishing its destruction before it could breed any more of its kind in the land of Siam. Mr. Edwards' car came through the encounter with only a lamp and mudguard broken.

In the $5,000 advertising contest, conducted by Arbuckle Bros., the coffee importers of New York, the first prize of $2,000 was won by Charles W. Mears, of the Winton Motor Carriage Company's advertising department. There were 18 prizes and hundreds of contestants. The purpose of the contest was to secure new ideas for the advertising and sale of Ariosa coffee, anl the Winton man put the best suggestions over the plate. He advised against freak schemes, and strongly advocated the persistent use of daily papers. Mr. Mears has been associated with the Winton company for four years as assistant to Charles B. Shanks, the general sales manager, and one of the cleverest men in the automobile industry.

R. W. Daniels and a party of friends in a 40-horsepower Studebaker last week made a test trip from New York City to Boston and return. In talking over the journey, Mr. Daniels said: "Everything went along in apple-pie order. We had a most satisfactory trip, the motor working like a charm, and we had no trouble the entire distance. Some rain storms crossed our path at the start, thus making the roads very slippery and muddy. In one place we were all but hub deep in the mud. Despite this, however, we managed to complete the journey in nine hours, and were congratulated upon our fine showing when we arrived in Boston. The return trip was made in perfect weather, and was much enjoyed by the party."

Two rules which should always be kept in mind by automobilists desirous of reducing their tire expenses to a minimum are, says the Michelin Tire Company, to keep the car fitted with tires large enough to carry the load easily and to always keep them well inflated. Michelin tires, when new, will stand a test of over 300 pounds to the inch. If not sufficiently inflated there will be excessive friction between the plies of fabric and rubber, resulting in the wrecking of the tire prematurely. If the tire is well inflated there is reduced deformation under load; reduced deforming means reduced action between the plies, less friction, less heat, and longer life. There is very little danger of getting tires inflated too tightly. A 3-inch Michelin, when new, will stand a strain of not less than 800 pounds to the square inch; 4 1-2-inch tires will stand 50 per cent. more. It is difficult with any means at the disposal of the automobilist, to inflate tires to more than 100 pounds to the square inch. Drop the pressure to 40, 30, or 20 pounds and more tires will be used up in a 50-mile run than would be consumed in 500 miles under proper conditions.

Not being satisfied that the two weeks' test carried out during the course of the New York shows conclusively proved how long the Atwater-Kent Spark Generator would run on a single set of dry cells, the makers, the Atwater-Kent Manufacturing Company, Philadelphia, Pa., transferred the entire outfit, consisting of the set of cells, the spark generator, Jones' speedometer, electric motor and the glass case containing them to the Chicago show. As the result of its two weeks' running the odometer showed a record of 4,249.6 miles, while the batteries, which had showed an average of 6 amperes at the conclusion of the first part of the test, had deteriorated to the extent of showing but 4 1-2 at Chicago. The outfit was officially restarted, exactly where it had left off, barring the loss in the cells, and when it had run 5,328.6 miles the plugs began to miss for the first time. On publicly breaking the seals and testing the battery, the cells were found to show an average of 3 amperes, thus losing but 1 1-2 amperes in a 1,000-mile run, a fact which strikingly indicates the extremely small current consumption of the spark generator. The latter was found to be in perfect condition at the end of its long run and all the plugs sparked regularly when fresh cells were inserted. The contact adjustment was not changed throughout the test.

NEW AGENCIES ESTABLISHED.

Edwin Kilburn, of Spring Valley, Minn., has closed a contract to handle the Ford line of automobiles in his district next season.

From January 1 the present agency in Chicago for the Thomas-Detroit will be changed. It is intended either to place a direct agency or open a branch. Coey & Company will continue to handle the Thomas Flyer.

Twenty-eight new agencies in thirteen States have been placed by the Forest City Motor Car Company, of Massillon, O., makers of the Jewel automobile. In addition three agencies have been concluded for abroad, in London, England, Cuba, and Porto Rico.

PERSONAL TRADE MENTION.

W. N. Norton, the newly-appointed superintendent of the Autocar Company, has been officially installed in his new position at the factory in Ardmore, Pa.

C. S. Ransom, for the past two years general manager of the Albany Garage Company, Albany, N. Y., has severed his connection with that company and taken up the agency for the Stevens-Duryea car at 5 Tweddle Building, Albany.

THE WORK OF THE COURTS.

A judgment for $19,195 has been entered by default against the Christie Direct Action Motor Car Company, formerly of 519 East Eighteenth street, New York City, in favor of William Gould Brokaw for the amount now due on a demand note of the company dated April 13, 1907, payable to the Christie Iron Works, which indorsed the note and delivered it to Mr. Brokaw. When the note was made Walter Christie was president of the company and Harry H. Tredwell treasurer. The company was incorporated with a capital stock of $300,000.

Judge Wheeler, of the Superior Court, has granted permission to the receivers of the Pope Manufacturing Company, Hartford, Conn., to continue manufacturing four months from December 28.